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AUGUST, 1906

THE INLAND ARCHITECT AND NEWS RECORD

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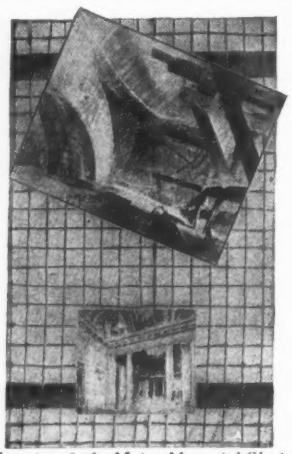

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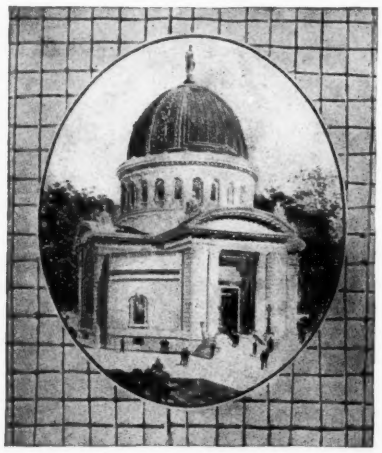

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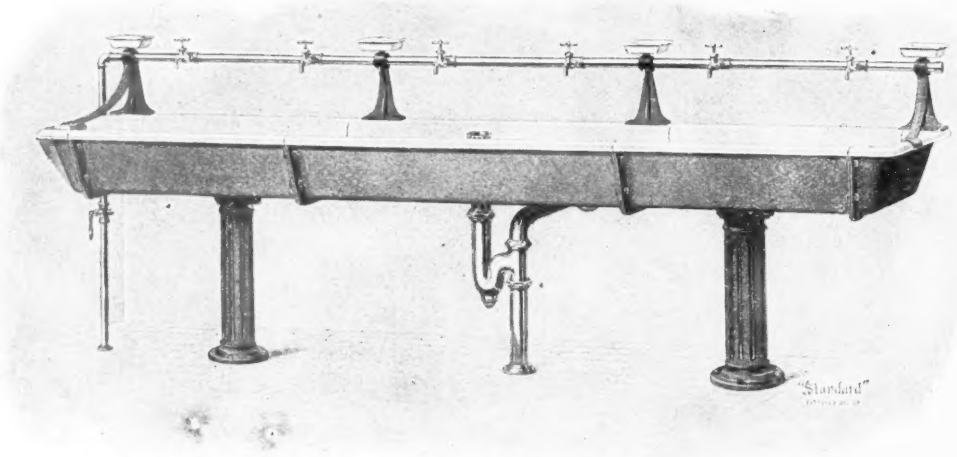

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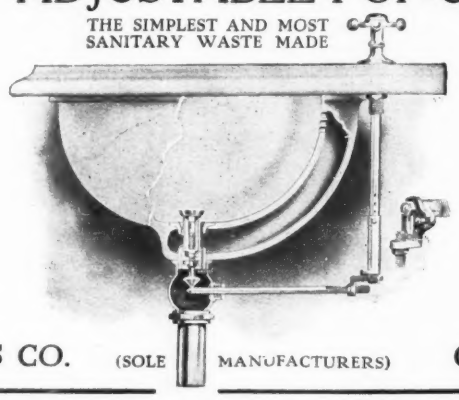

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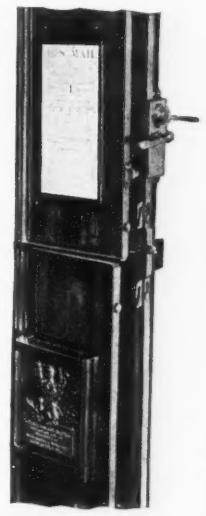

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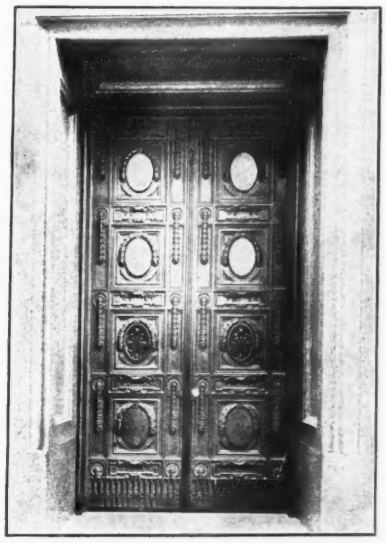

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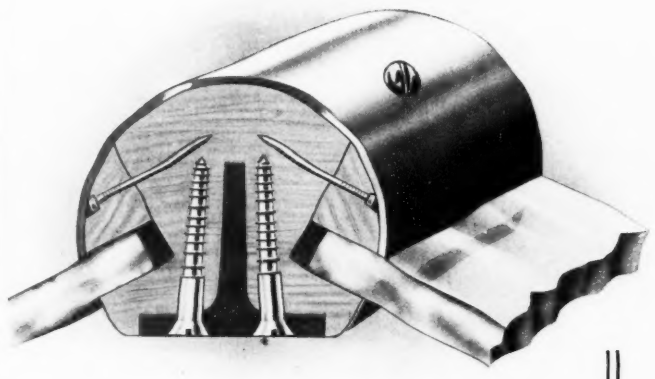

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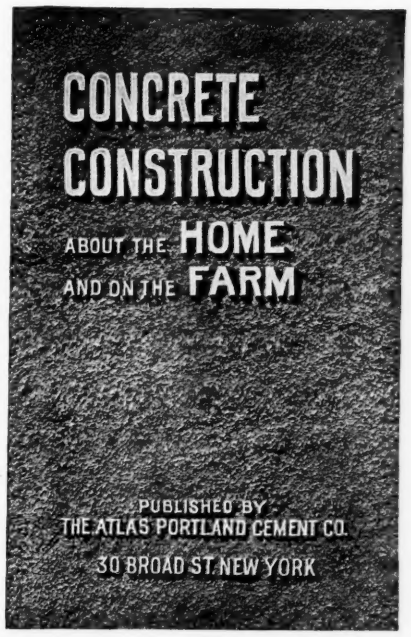

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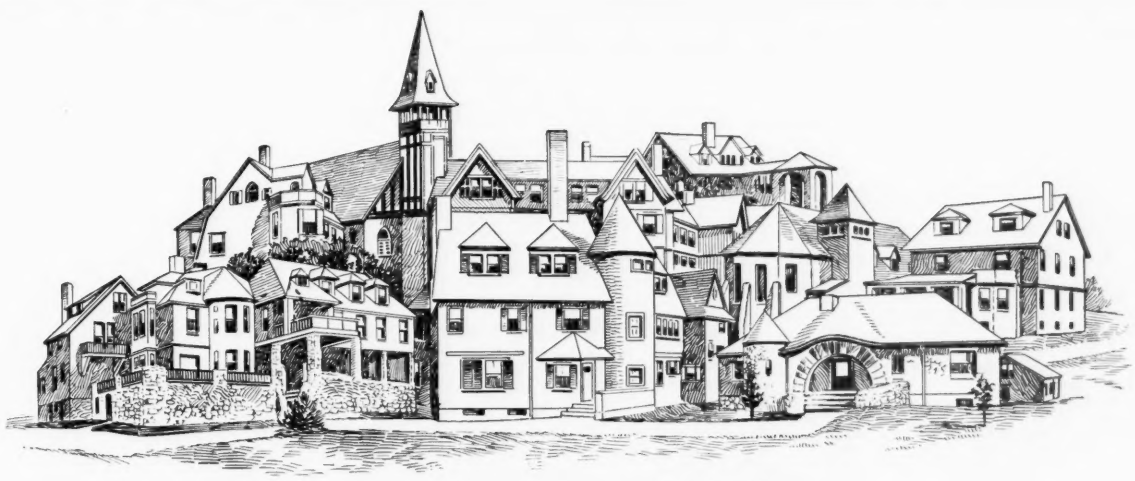

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Inadequate Compensation to Architects.

Perhaps the most important contribution of the year to architectural literature, the one that will appeal most closely to the welfare of the architect, is the paper commenced in this number on "An Architect's Services and Remuneration." The author, Glenn Brown, secretary of the American Institute of Architects, has dealt with the subject in his usual thorough and comprehensive manner. His facts have been gathered not only here but abroad, and the paper presents valuable contrasts between the services and remuneration that prevail in the various countries. It is shown that in the United States the architect renders more service for less compensation than is the rule abroad. It is to the personal interest of every architect that the facts of Mr. Brown's paper be brought forcibly to the attention of clients, the press and the public. The time would seem opportune for the associations of architects to make a concerted movement to establish a scale of commissions that would afford the profession a more just remuneration for their services.

Building on the Percentage Basis.

An architect whose practice is very large stated recently that for the past ten years all contracts awarded by him had been on a percentage basis, figured on the actual cost of all material and labor that went into the work. The results of his long and large experience have convinced him that this method is much more satisfactory than to let contracts for a given sum. He finds that while the owner has no contract in advance for the completion of the building at a fixed price, the expenditure is always within his control, and verification is possible whenever desired. Itemized bills for material and labor are rendered from time to time, and he has the satisfaction of knowing the amount and kind of supplies that are being used in his building. The always annoying item of extras is eliminated, and changes required during the progress of the work are made with the least possible expense. The owner feels throughout that his interests and his alone are paramount. There is no temptation on the part of the contractor to use cheaper materials than are specified, nor to slight the work, as he is assured of a fair profit.

Penalties for Delay Avoided.

The contractor by the percentage plan is not liable for unexpected advances in prices, nor for penalties for delay. There are avoided all the uncertainties and risks that are ever present with a lump sum contract, and the contractor is free in mind to push the work at every point in furtherance of the quick completion of the building and the best interests of the owner. The contractor would not likely attempt to manipulate vouchers to show fictitious cost prices as, if he were so disposed, the knowledge of the architect would be a certain check upon such practices. The architect mentioned has encountered opposition at first from the owner who has the natural desire to know his full obligation at the start, but this has been overcome in every case when the owner has had brought to his attention the probable saving in cost and the many

substantial advantages to him from the percentage basis. The contractor by such an arrangement becomes, in a degree, the agent of the owner, and harmony between all parties to the construction is fostered. The usual position of the architect as a buffer between the owner and the contractor ceases.

Ingenious Credit to Architects.

The natural desire of architects to obtain just credit for their buildings has developed considerable ingenuity in the attainment of this object. The method employed has often defeated the credit sought. All will recollect the acrostic spelling on an eastern library building in which the names of its architects were introduced; and the chiselling that followed to obliterate this credit. Today there is much commotion over the bronze doors of a State capitol building that contain portraits not only of the architect, but of others connected with the building construction, as well as of a number of politicians. The architect is said to defend his course by quoting the precedent of a prominent church in New York City, the doors of which are decorated with the heads of the architect, contractor and others identified with the construction. At the best the public is none too willing to bestow due credit upon architects for their creations, and are quick to resent the effort to secure credit by such ingenious methods as those mentioned. From the sentiments expressed in answer to the wide-spread inquiry of The Inland Architect, all architects desire proper credit in connection with the buildings designed by them, but wish to secure this in a straightforward, dignified manner. We look forward to some action being taken in this direction by the next convention of the American Institute of Architects.

International Congress of Architects.

The seventh International Congress of Architects at London was largely attended. At the inaugural meeting, held at Guild Hall, the opening address was delivered by President John Belcher, of the Royal Institute of British Architects. The influence of climate upon architecture was recalled by the expression of the speaker that the severe and somber type of English architecture was due largely to the dull gray atmosphere that usually prevailed. This was contrasted with the bright, warm conditions of the South, that favored the productive fancy of the artist. The modern English domestic buildings were justly praised as a development peculiar to that country. The public buildings of London, it was stated, were at a disadvantage through the lack of stately approaches that enhanced the buildings of other great cities. The growing tendency toward a greater interest in architecture by the educated public was noted and the interesting statement made by President Belcher that action had been taken to furnish the public with simple data that would aid to a correct judgment of the architecture of buildings. This movement is similar to that in progress in America in which Russell Sturgis is the preceptor.

Reinforced Concrete Considered.

The one construction subject specially considered by the congress was Steel and Reinforced Concrete. In this discussion delegates from most of the countries represented took part. Nothing especially novel was advanced. It was stated that while the material does not lend itself readily to architectural effect, an improvement in this direction was probable. A further observation was that sculpture and molded relief work for ornamentation will give place in concrete work to superficial painting which will afford an enlarged field for the artist. The paper by Peter B. Wight on the "Use of Burned Clay in Building Construction" was of unusual interest, especially to the European hearers. Regarding Architecture and Salaried Officials, the opinion was expressed that "The artistic gifts of an artist oppressed by the yoke of office can never undergo the necessary development"; an opposing view given was that numerous instances might be cited where most excellent work had been achieved by official architects, which is doubtless true. The question of salaried officials has had earnest consideration for several years, both in English and German architectural societies. In England the opinion prevails that an official architect can not give the time necessary for large work. In Germany an effort was made to refuse the salaried official admission to the architectural societies, the hope being that all important public work would be open to all architects.

Many Resolutions Passed.

The following resolution was passed by the Congress, but not without opposition: "Resolved, that in future in the interest of the administrations and of the public, and in the highest interests of the art of architecture, public administrations, whether governmental, provincial or municipal, should entrust important works of architecture only to professional qualified architects, either by competition or by other means." On the subject of the Architect-Craftsman this pregnant thought was expressed: "It is essential to keep before the student the ultimate end of all his training—viz., skill not in draftsmanship or craftsmanship, but in architecture." The opinion that quite generally prevailed was that the architect would find of great advantage the theoretical knowledge of every trade and of the qualities of the materials that he uses; but that it is not necessary that he should have the manual skill of the various trades. The sentiment regarding the Ownership of Drawings was expressed in this terse resolution: "That this congress is of opinion that the architect is employed to produce a building, and that all drawings and papers prepared by him to that end are undoubtedly his." The discussion of The Conservation of National Monuments resulted in the resolution, "That the governments should be empowered whenever occasion arises to expropriate a monument which is historical, archæological or artistic." In addition to the remarks by President Belcher, above mentioned, on the subject of the Education of the Public in Architecture, the interest in the topic was evidenced by the reading of numerous papers expressing the sentiments of the several countries. The question of the architect's control was met by the resolution: "That the architect in the construction of a building should be given absolute power over the co-operating craftsmen, but in a special manner over the co-operating artists." A resolution likely to have much influence on the future status of the architect was expressed in few words — viz.: "That it is desirable in the interests of the public of all nations and of the profession of architecture that all practitioners should have a statutory qualification." The Congress was in the nature of an international clearing house for architectural ideas, and important results were expressed in brief and direct resolutions. Vienna was awarded the honor of the next Congress.

AN ARCHITECT'S SERVICES AND REMUNERATION

BY GLENN BROWN, ARCHITECT
SECRETARY THE AMERICAN INSTITUTE OF ARCHITECTS

FEW appreciate the time, labor and skill expended by the architect in the preparation of drawings for a building, while a smaller number are aware that an artistic sense, a broad education, long training, special knowledge in the history of art and construction, together with business knowledge and executive ability are necessary to produce artistic and lasting results. To attain artistic expression in a building the architect must have full charge from the beginning to the completion of the structure, as the life-giving qualities which make a work of art require the solicitous care and guidance of the artist.

Upon receiving a commission or entering a competition, before commencing the drawings, the architect must study the site and surroundings with reference to its artistic possibilities and its utilitarian relations to street traffic and existing buildings. He must then investigate and understand the various branches and methods of the business which the building is to house. When these investigations have been systematized, he is ready to make preliminary drawings. Only an architect is aware of the drawing after drawing which is made, discarded and destroyed during this, the most important step, where the highest skill and the best judgment is required in the erection of a building. Having arrived at a satisfactory solution of the plan, the architect must obtain an artistic expression of the plan in elevation and perspective, an expression that will enhance and dignify the landscape, and be in harmony with the surroundings or the proposed surroundings of the contemplated structure. The solution of this portion of the problem requires the artist. Again, drawing after drawing is made, studied, discarded and destroyed before a satisfactory solution is reached. The plan and design are evolved during these preliminary stages; the fundamental steps in the problem if it is to be a commercial success and a work of art.

The preparation of the scale or working drawings and specifications follow in natural sequence. Foundations, natural and artificial, must be investigated, tested, studied, altered and calculated. The various materials must be selected with reference to durability, strength, color, fitness, price, character of the building and the desired expression. Unknown materials and conditions must be tested chemically or physically. During the progress of this branch of the work innumerable questions of detail are considered and decided. Plans are prepared for drainage, heating, electricity, structural iron, masonry and carpentry during the preparation of the working drawings. The skill of the economist, constructer and of the artist is required in adjusting the rights of the various claimants to space in the construction. The architect must be vigilantly on guard that no one branch shall monopolize the area which more beneficially belongs to another, that no one or combination of interest shall detrimentally affect the scheme or artistic expression as laid out in the preliminary solution.

In the preparation of the working drawings the elevations are drawn to a larger scale, artistic details of interior and exterior are more clearly and definitely shown, while all structural features are carefully calculated and their dimensions marked. While the second stage of an architect's service is more mechanical than the preliminary stage, it requires a knowledge of architectural engineering and construction, which includes a knowledge of material, a knowledge of mechanical engineering in heating and electrical or mechanical installation, a knowledge of sanitary engineering in drainage and water supply as well as a knowledge of artistic expression to guide the whole. The architect or his assistants must have this knowledge, even if experts are employed in different branches, otherwise he will soon discover that some one department will monopolize space that will destroy more important features.

The third stage is receiving tenders or bids, and the letting of contracts. Here the business qualifications of the office are called into play. Systematic and methodical business methods of no mean order are required to organize and execute this portion of the work on a monumental building. Contemporaneous with this period of the work and throughout the progress of the construction full size detail drawings are being prepared. The drawings require constant attention, both from the structural and the artistic side of the architect. First, they must be joined, built or constructed to stand, to resist weather, decay, water, fire, expansion, contraction, shrinkage and the various strains of dead and live loads, which have all been previously considered in the scale drawings, but the ultimate stability of which often depends upon the final details which cannot be shown on small drawings.

A slight deviation in a full size molding, modillion, pilaster, cornice or other ornamental feature which an ordinary man would consider an exact interpretation of the scale drawing means the difference between something artistic and beautiful or something crude and ugly.

As soon as the contracts are let the supervision of the work begins. The question of supervision is an important one. It appears to be the accepted opinion that when the drawings are prepared, any one familiar or even unfamiliar with construction can erect the building in a satisfactory manner. This might be the fact if the architect and his assistants made drawings so perfect that no alteration would better them, and if it were possible for the superintendent, contractors and various sub-contractors to carry out the intention of perfect drawings without deviation.

Unfortunately, architects, superintendents and contractors are as fallible as other men. According to their ability, they do not produce the best results on the first or second effort. From the inception to the completion of the building, daily arise questions of interpretation, questions of variation, questions for consideration on which depend convenience or inconvenience, economy or wastefulness, refinement or crudity, harmony or discord, a building that will be a work of art or one that will be aberration.

With an architect of capacity in charge, who has presented a good scheme, and with contractors and other subordinates desirous of producing the best results, no one is as well fitted to weigh and decide such questions as the man who devises the scheme.

It is to be regretted that with the most carefully studied drawings, superintendents do not hesitate to make what they consider slight changes or alterations which they consider improvements. The contractors have a financial temptation, as they can save money by slight changes in detail, method of construction, substitution of a material

or device which is (according to statement) as good as or better than the one specified. In the opinion of the majority of superintendents, such changes are immaterial, as they do not appreciate the importance of the artistic idea. All deviations of this character, whether made by a superintendent or contractor, with the best intention, are with few exceptions detrimental to the building.

When the progress of the building reaches the final stage of color and decoration, no one is so well fitted to pass judgment upon what will properly enhance and express the architecture of the building as the designer of the scheme. The architect must experiment on the actual work so as to determine what is best, as no man can determine, except on the premises, the effect of shades, shadows and reflections on tones and tints, or the effect of one color on the other under the varying conditions which exist in every building.

To produce the best results (only the best results should be considered in connection with monumental work), an architect of training and capacity must be in charge from inception to completion.

The selection of an architect: Although it is considered best for large work to select an architect who has demonstrated his capacity as an executive, constructor and artist in executed work, municipal and national governments usually make the selection by some form of competition.

Competitions as conducted in this country have often failed in producing the result which they aimed to attain, that is, the best arranged structure for the uses intended and the most artistic building for the site and surroundings. Competitions are not a certain means of securing the best building and it is even doubtful if they secure the best design or scheme. Men who have proved themselves capable, are usually busy men and can not afford to spend time and thought on problems where the outcome is so uncertain. A competition in which the competitors have been selected for their known ability, and paid a small sum to partially cover expenses, is the only certain method of securing competent competitors.

A brilliant designer does not necessarily insure a good building. In case the designer's capacity as an executive is unknown, provision should be made to associate him with an architect of known ability. An engineer can not from his education fill such a position on the artistic side of the problem.

To secure the results desired by the client, government, community or the profession, a scheme for competition should be drawn up by a professional expert. It should be a paid competition, the selection should be by a professional jury, and the successful architect should be awarded the work, at the full commission, with a guarantee that the competitor will have charge of the execution of the work.

The competitions for government work, conducted by the Treasury Department, under the Tarsney Act, have proved very satisfactory. The scheme for the competitions have been drawn by Mr. J. K. Taylor, supervising architect. The competitors are selected. The awards have been made by a jury of three or more experts. The decisions of these juries have met the approbation of the profession after the various drawings submitted have been published or exhibited. The programs being drawn by an architectural expert have fulfilled the various conditions necessary to make the preparation of drawings the least burdensome, and so as to secure a selection purely upon the merit of the scheme.

One important feature has been unfortunately and unjustly eliminated in these competitions, the payment of each competitor for the actual expense of making sketches. The work in each case has been awarded to the successful competitor, who has been paid 5 per cent on the cost of the building for architectural service with one exception.

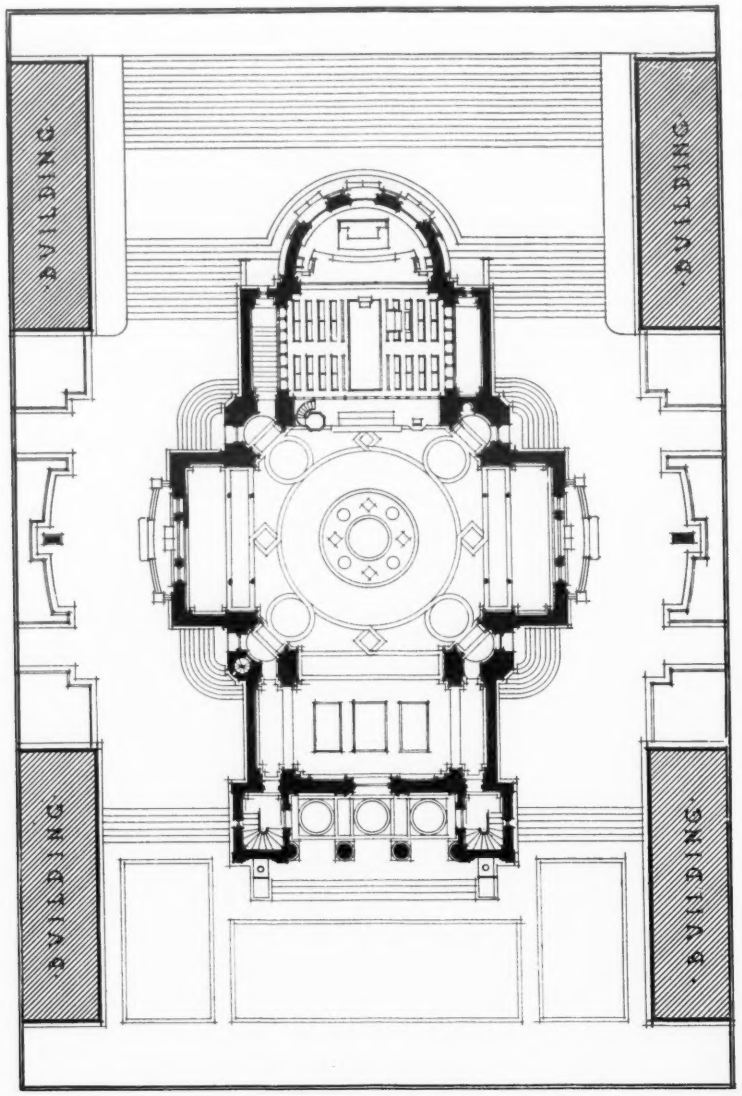
The system adopted by the Treasury Department has been the cause of other government buildings being given out by competition, conducted on similar equitable lines. The Municipal building of the District of Columbia, in which each competitor was paid $500, the Agricultural building, the Municipal Hospital for the District of Columbia, the building for the insane asylum, and the group scheme for the War Department at West Point. In the latter competition each competitor was paid $2,000, while the average expense or cash outlay of each architect was $3,000.

The result of the competition for the Agricultural Department was satisfactory, but, unfortunately, after the award was made the Secretary of Agriculture removed the architects and appointed others, because of a dispute over the amount of service to be rendered by the architects, the Secretary being determined to limit their service to the preparation of plans, and the architects claiming a contract to have full charge. This decision has been very unfortunate for the community and for the art interest of the country, as only the best results can be obtained by the architect superintending as well as designing.

In France, where the subject of both art and economy has been most thoroughly studied and where they have had the advantage of a long accumulated experience, architects are selected on definite and well considered lines. The government has a technical body of experienced men, in which architects predominate, called a building council, to whom all questions relating to government buildings are referred. This council employes the architects who have won the Prix de Rome after their four years' sojourn and study in Rome in the position of auditors and examining experts. After testing their capacity the government selects from these highly educated and capable artists as vacancies occur the architects for municipal, national and historic buildings. Architects for gothic work are selected from men who have proved their fitness in ecclesiastical work.

The council may select an architect for special qualifications adapted to the work, or a secretary of a department may appoint an architect on the approval of the council, who thus protects himself from outside pressure and political intrigue. Before the work commences the plans must be approved by the council. The council also has charge of selection by competition. The men who have won the Prix de Rome have almost, without exception, proved successful in the competitions for large government buildings, while the council of architects protects the government interest.

Each Russian ministry has its technical council, who are entrusted with questions of building and who must approve all designs. They select for their more ordinary buildings architects who have passed a course of study in a government school of architecture and are known as court or palace architects. The technical committee conducts competitions and selects designs or makes direct selection, according to the fitness of the architects for the work to be undertaken. [To be continued.]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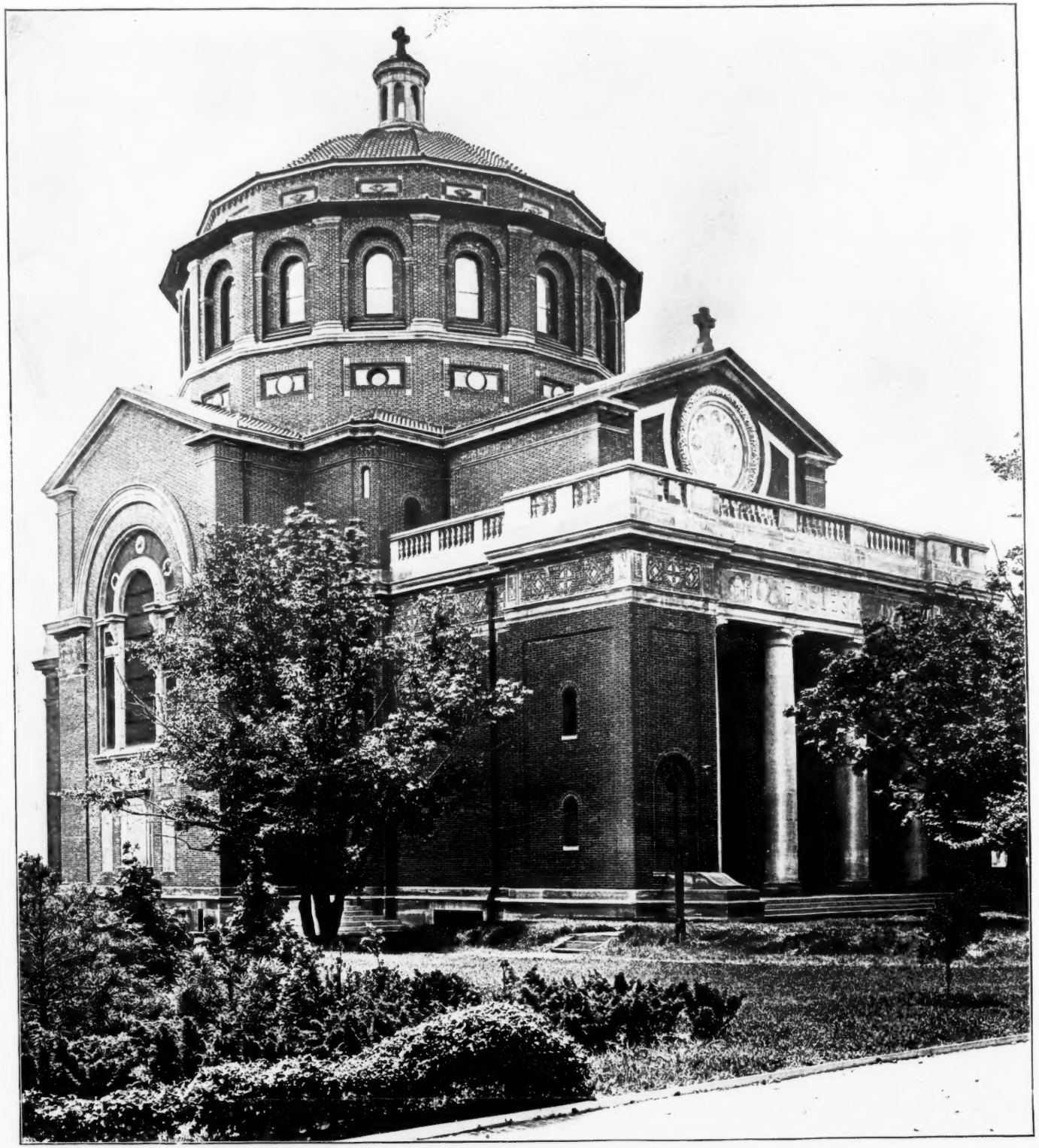
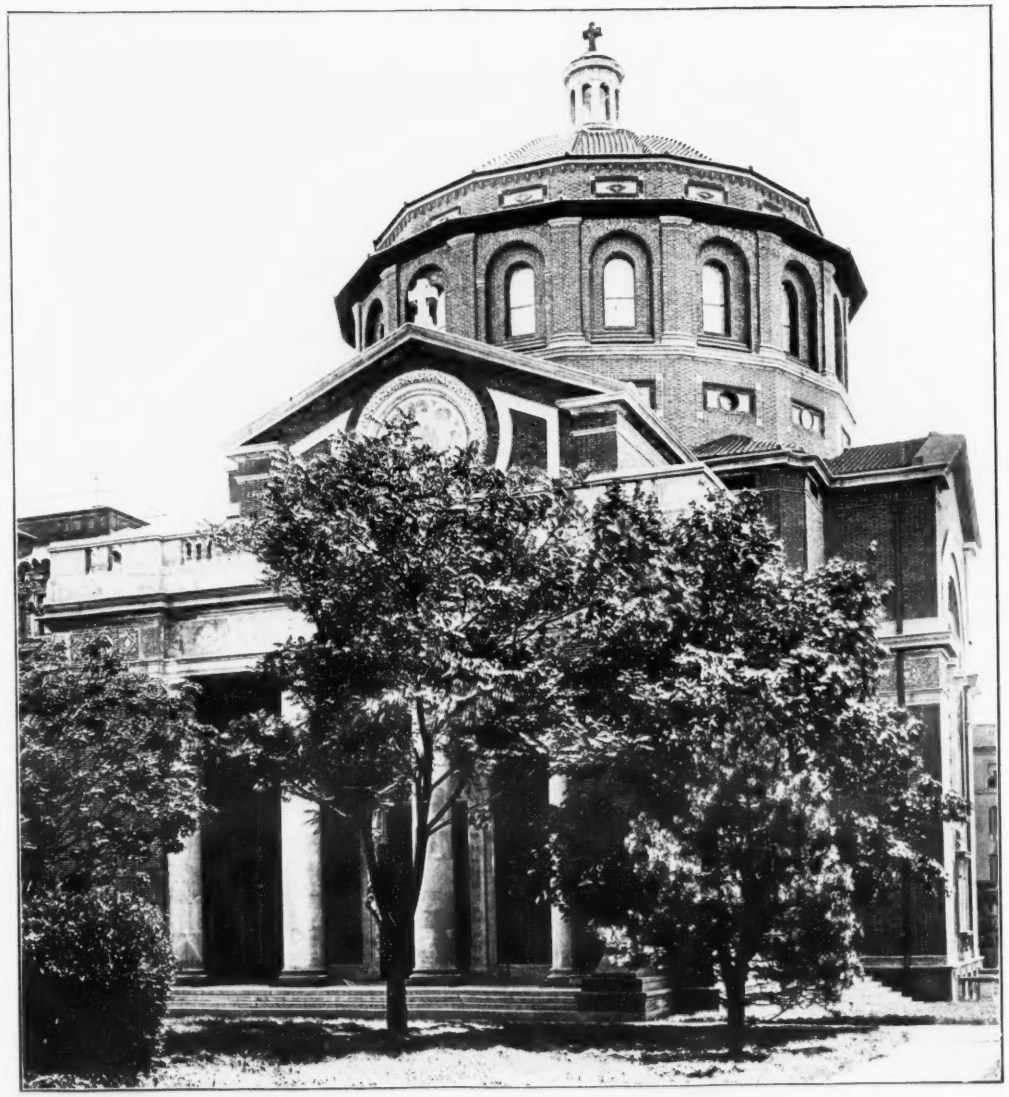


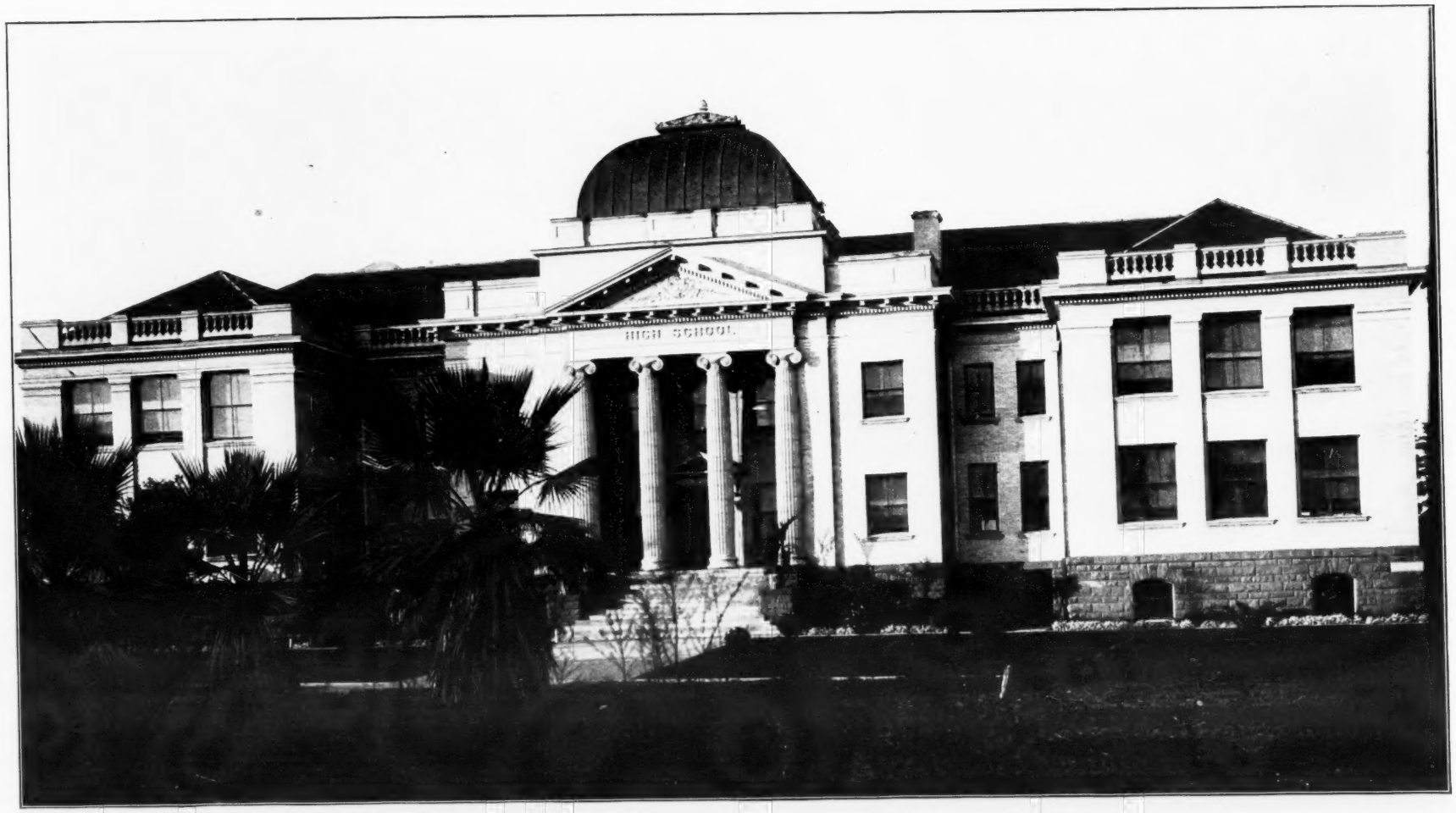


CHAPEL, COLUMBIA UNIVERSITY, NEW YORK.

HOWELLS & STOKES, ARCHITECTS.

RESIDENCE OF CLAYTON GARVEY, PASADENA, CAL.

F. L. ROEHRIG, ARCHITECT.



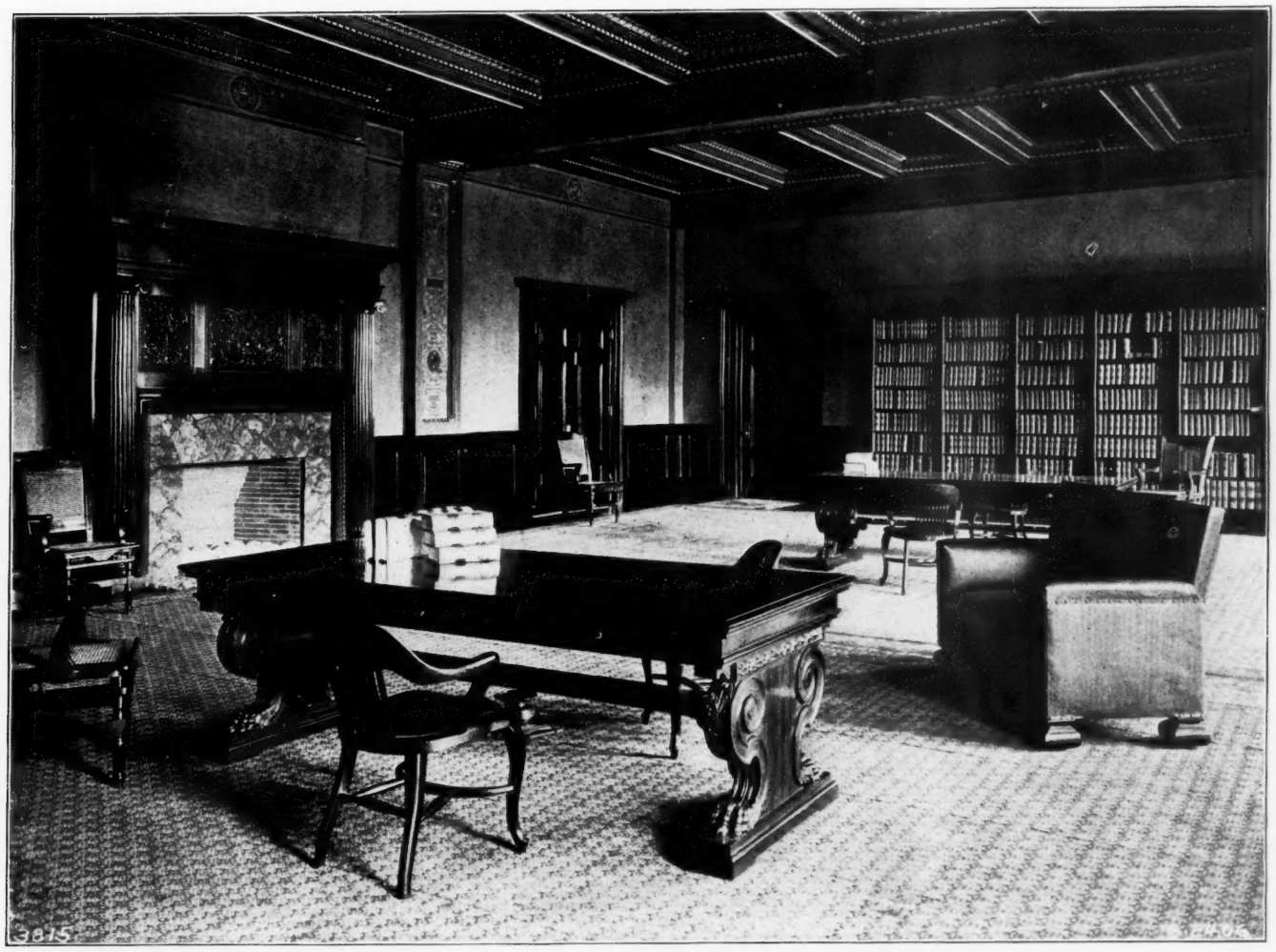
HIGH SCHOOL BUILDING, PASADENA, CAL.

STONE & SMITH, ARCHITECTS.

VIEW IN CORRIDOR, MAIN FLOOR.

INTERIOR VIEWS, UNITED STATES COURT HOUSE AN

RANKIN & KELLOGG, ARCHITECTS,



VIEW IN LIBRARY.

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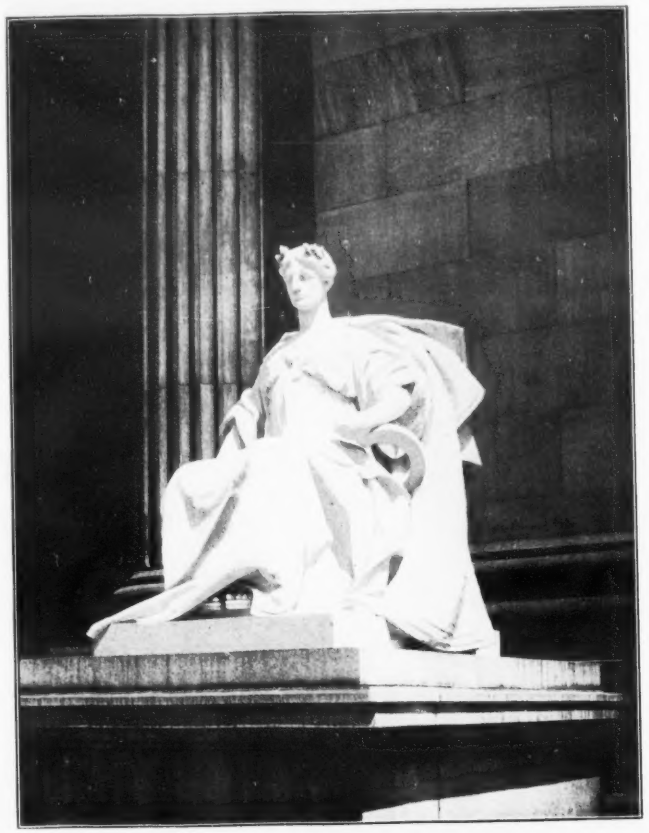
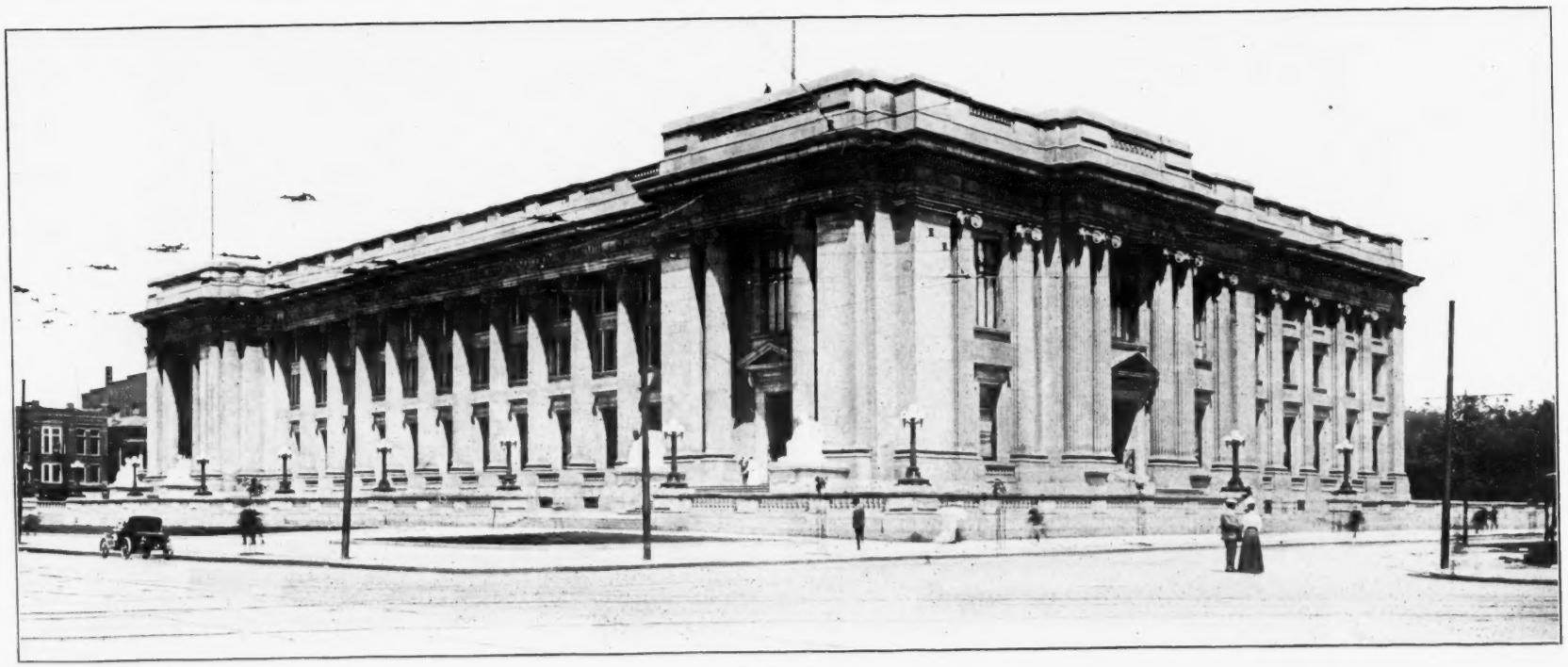
RT HOUSE AND POSTOFFICE, INDIANAPOLIS, IND.

GG, ARCHITECTS, PHILADELPHIA.



UNITED STATES COURT HOUSE AND POST OFFICE ERECTED ANNO DOMINI MCMIII

REAR VIEW.



FRONT VIEW.

UNITED STATES COURT HOUSE AND POST OFFICE, INDIANAPOLIS, IND.

RANKIN & KELLOGG, ARCHITECTS, PHILADELPHIA.

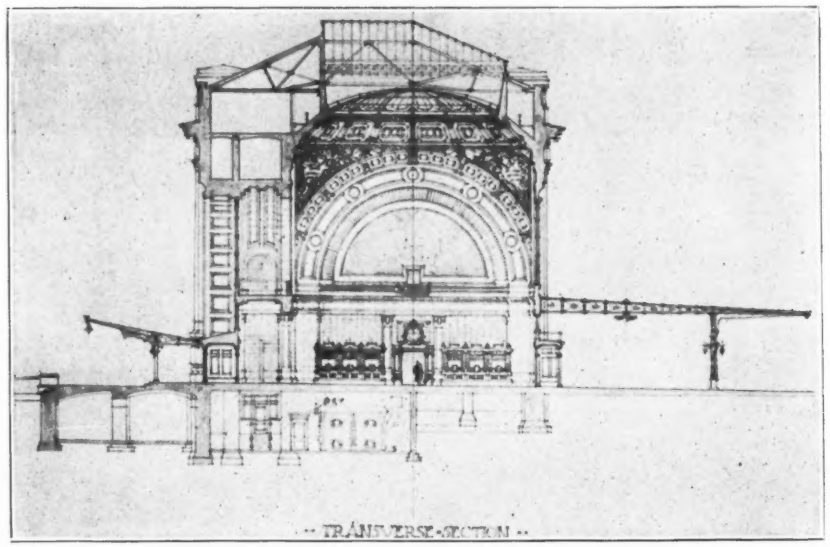
STATUARY BY J. MASSEY RHIND, NEW YORK.

RESIDENCE OF F. H. HOLTZ, DETROIT, MICH.

ALBERT KAHN, ARCHITECT.

RESIDENCE OF JULIUS HAAS, DETROIT, MICH.

A. W. CHITTENDEN, ARCHITECT.



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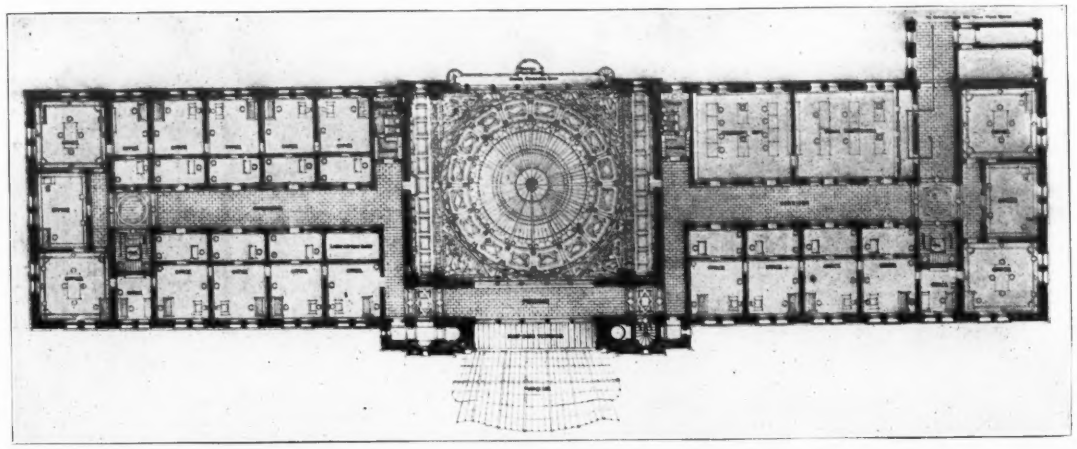
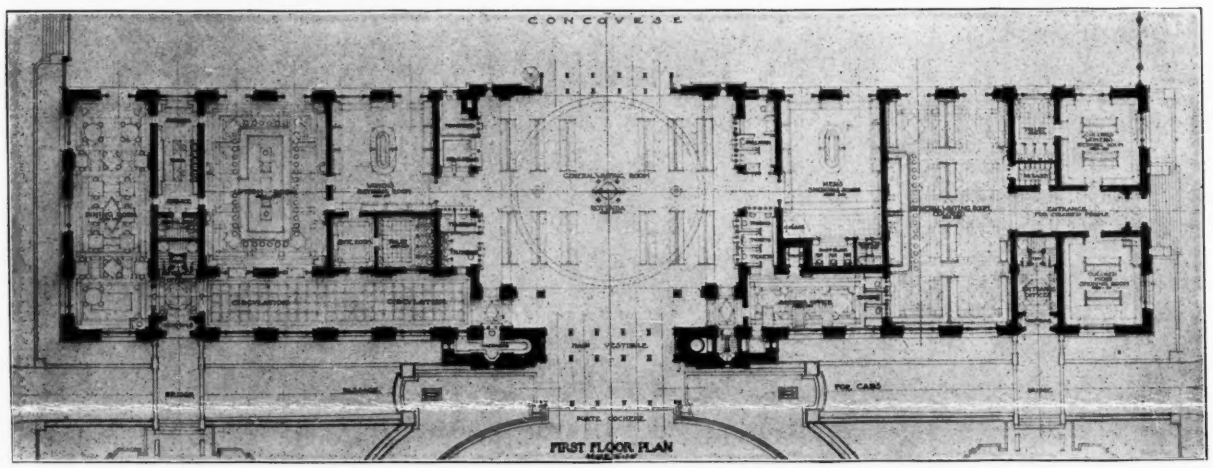
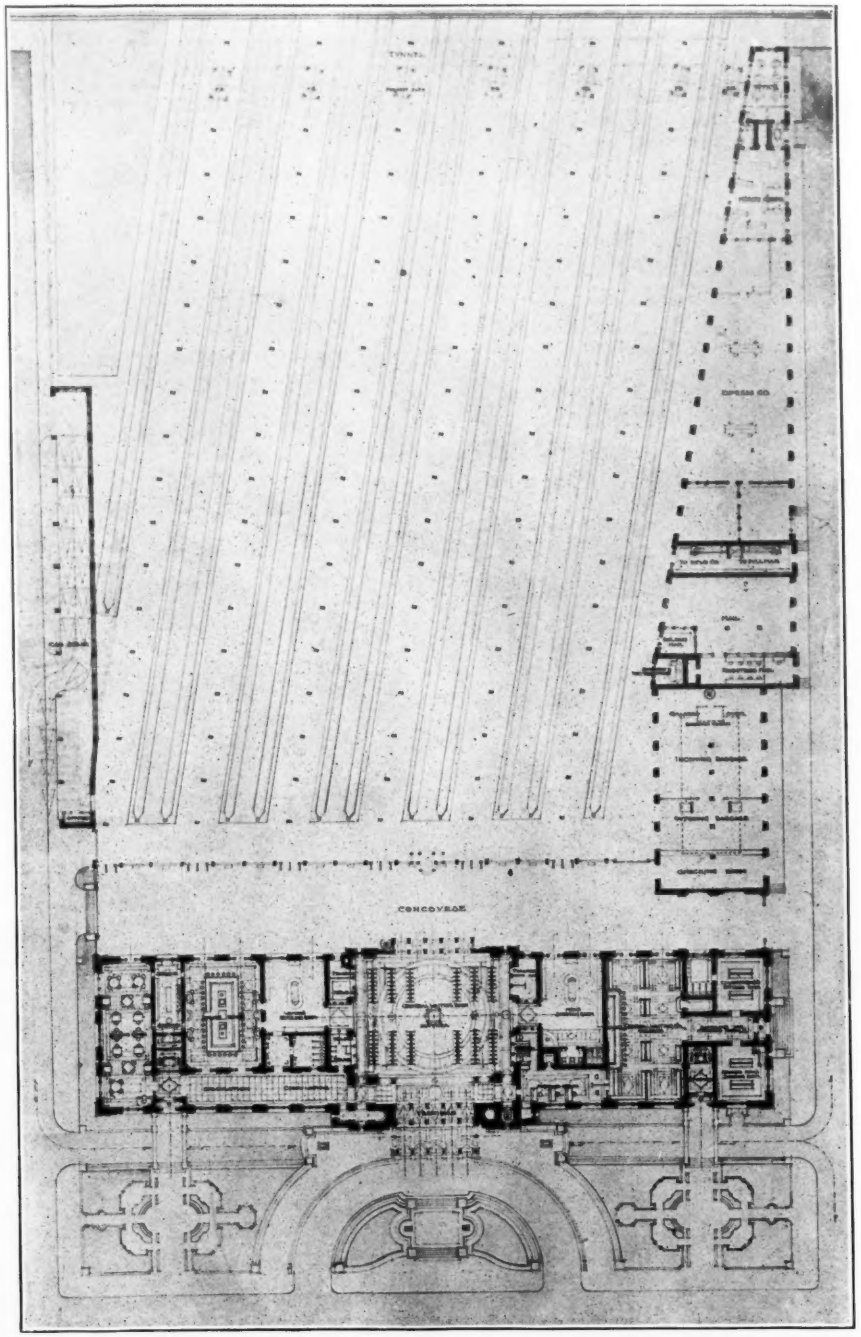
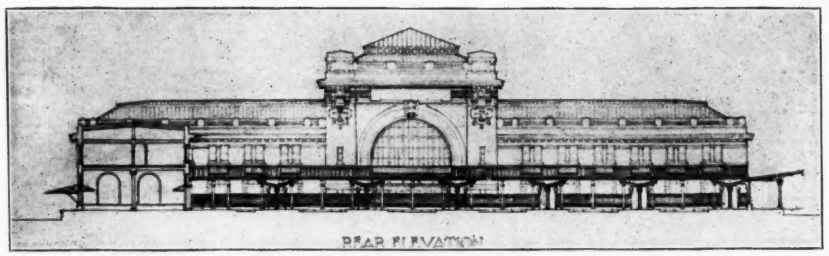
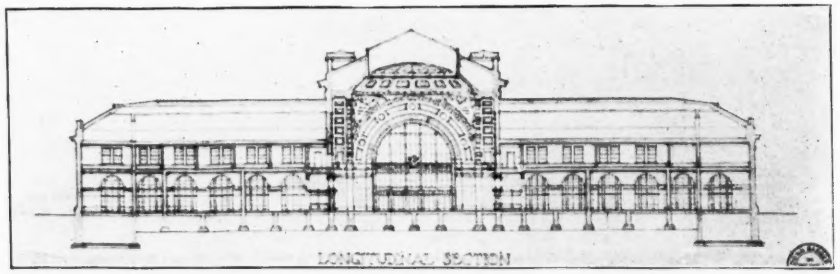
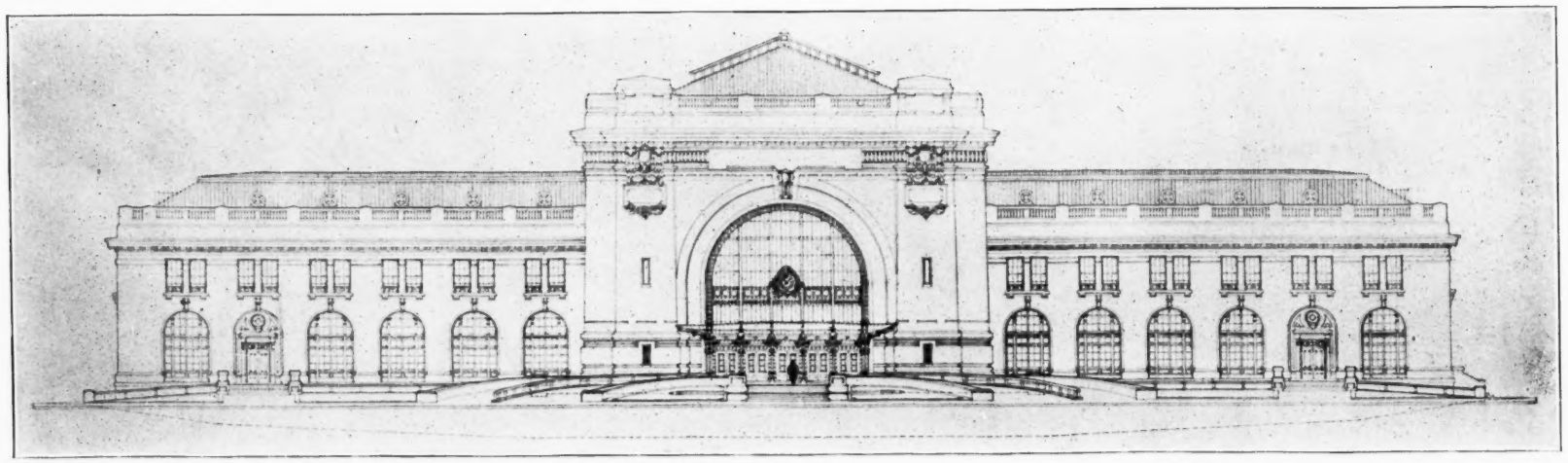






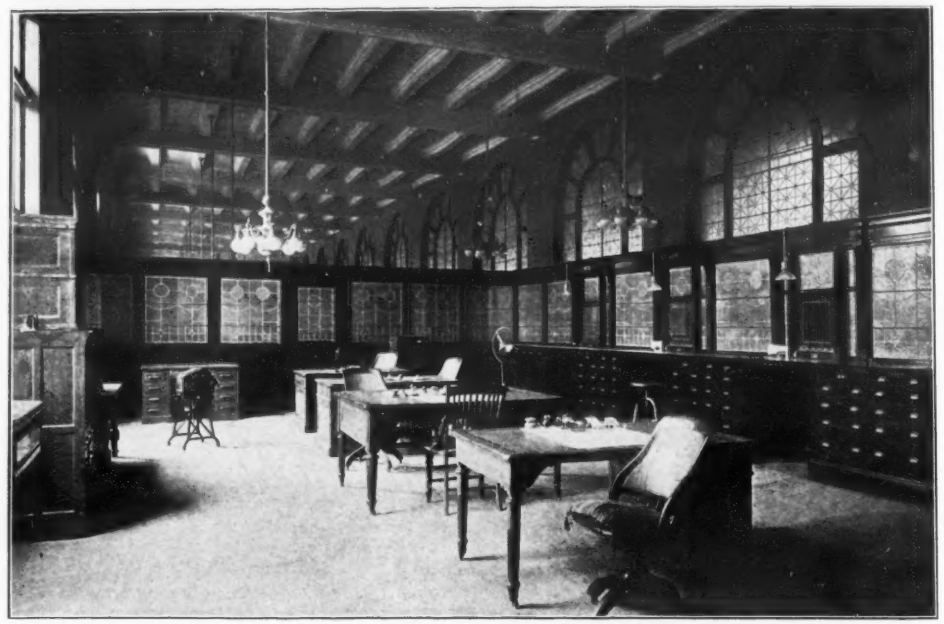


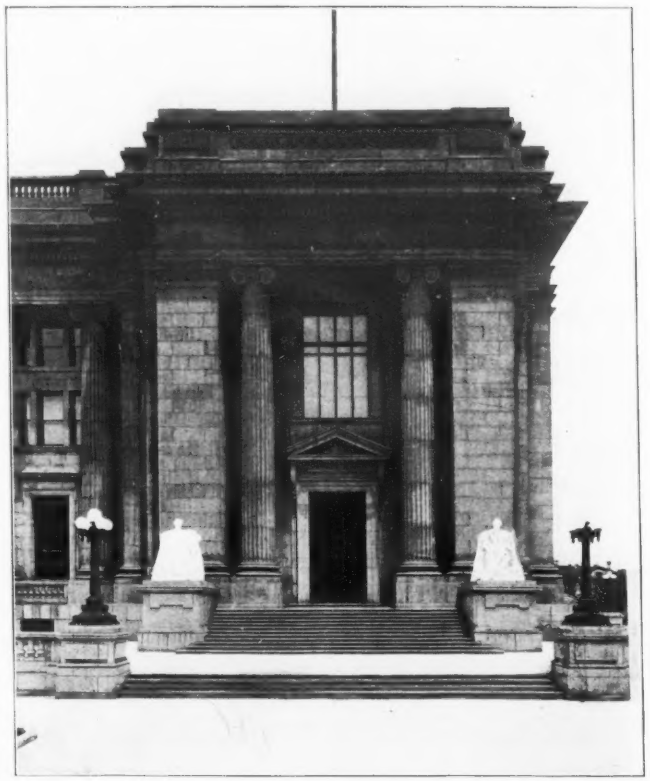


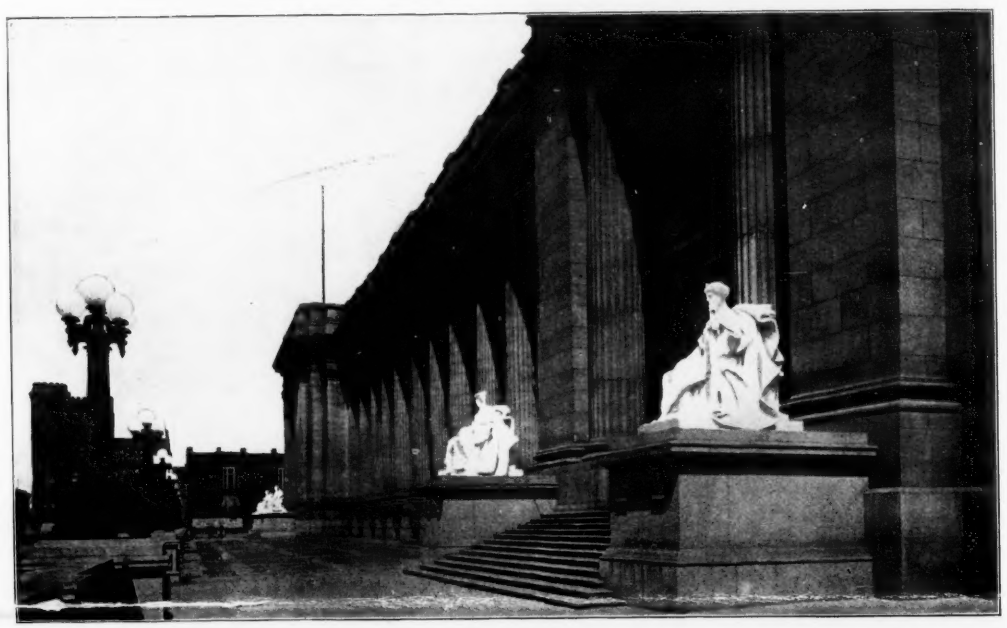


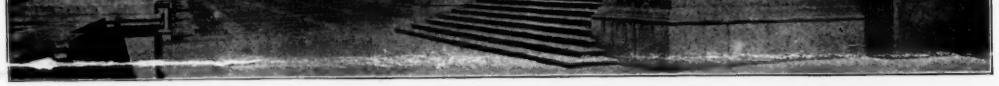
SUCCESSFUL COMPETITION DESIGN FOR RAILWAY STATION, CHATTANOOGA, TENN.

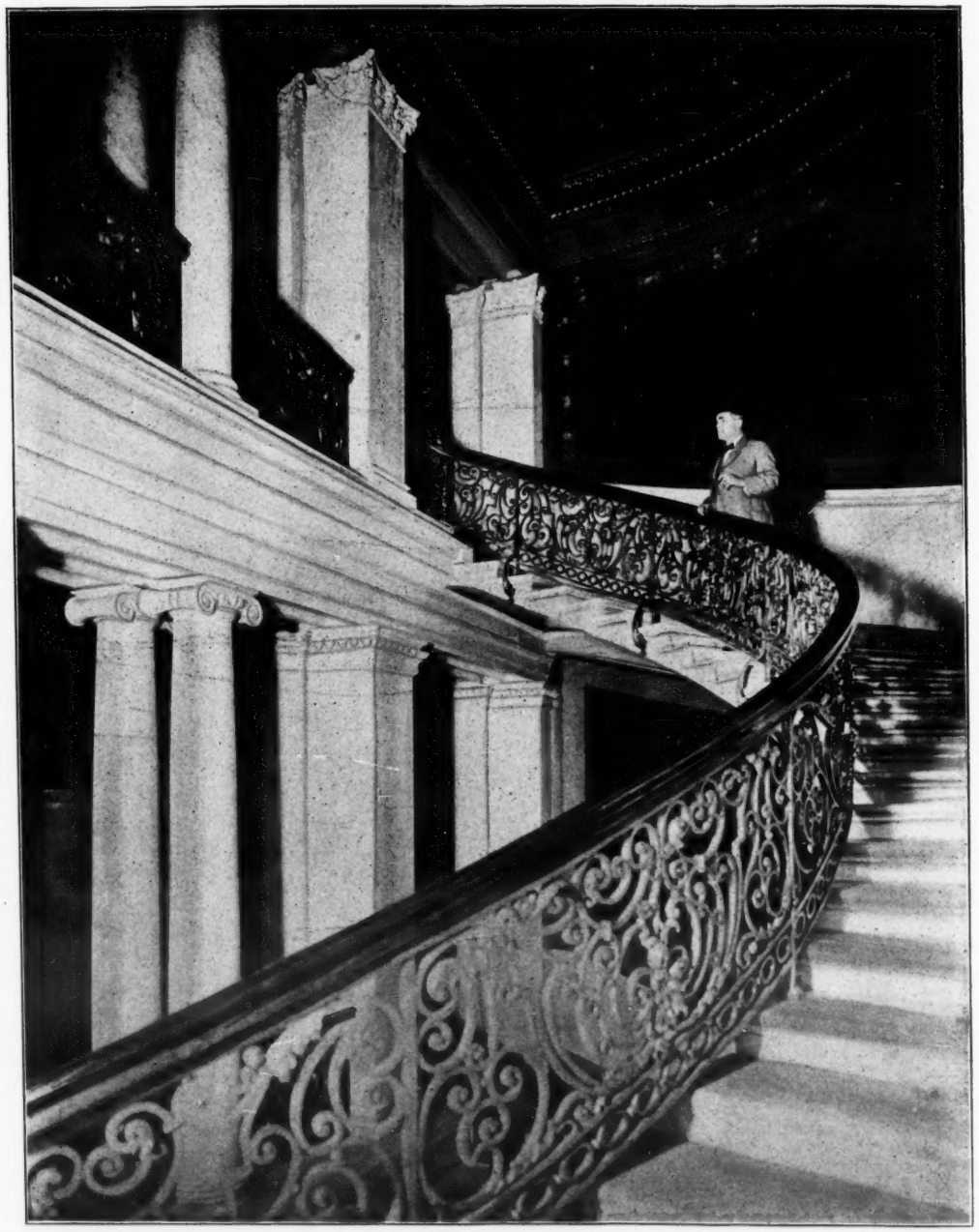
DONN BARBER, ARCHITECT, NEW YORK.











UNITED STATES COURT HOUSE AND POST OFFICE, INDIANAPOLIS, IND.

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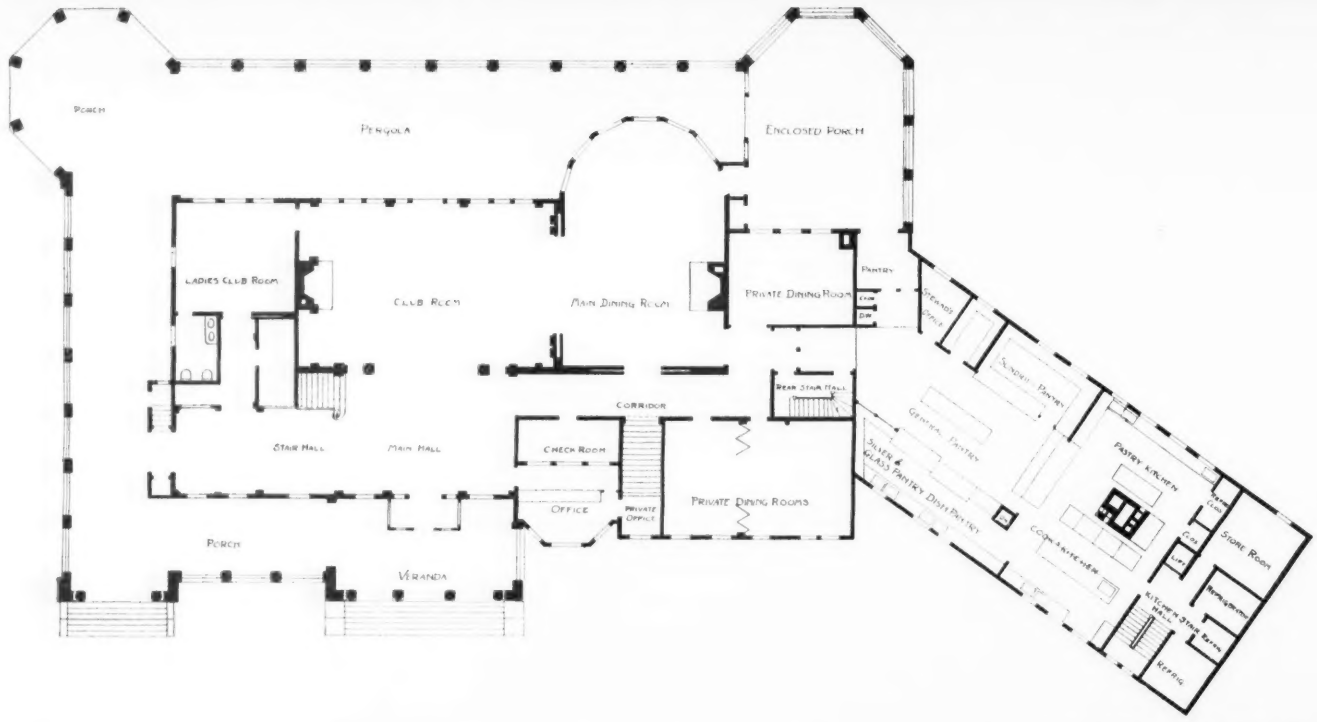
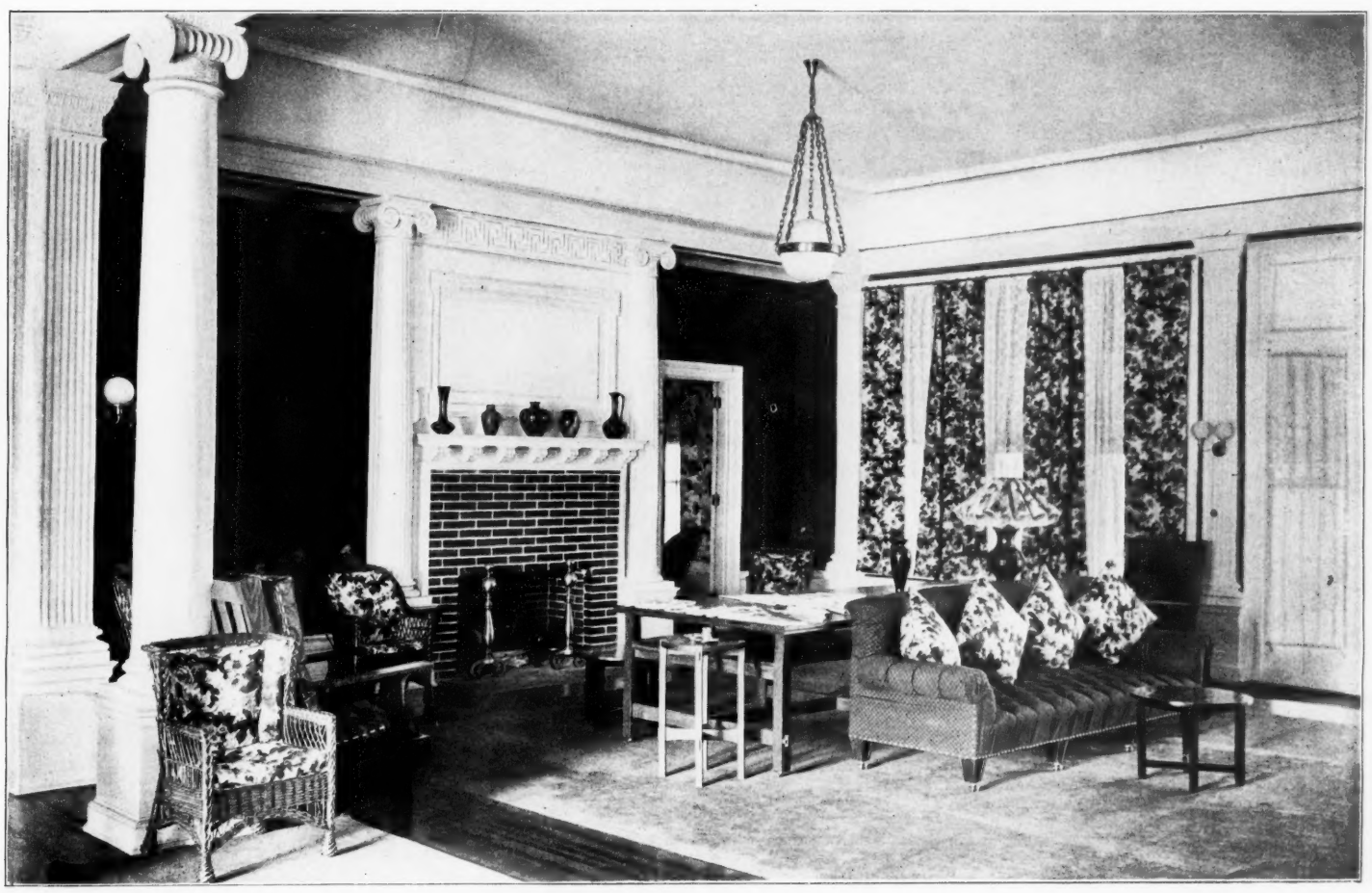


COUNTRY CLUB HOUSE, E. WALNUT HIL

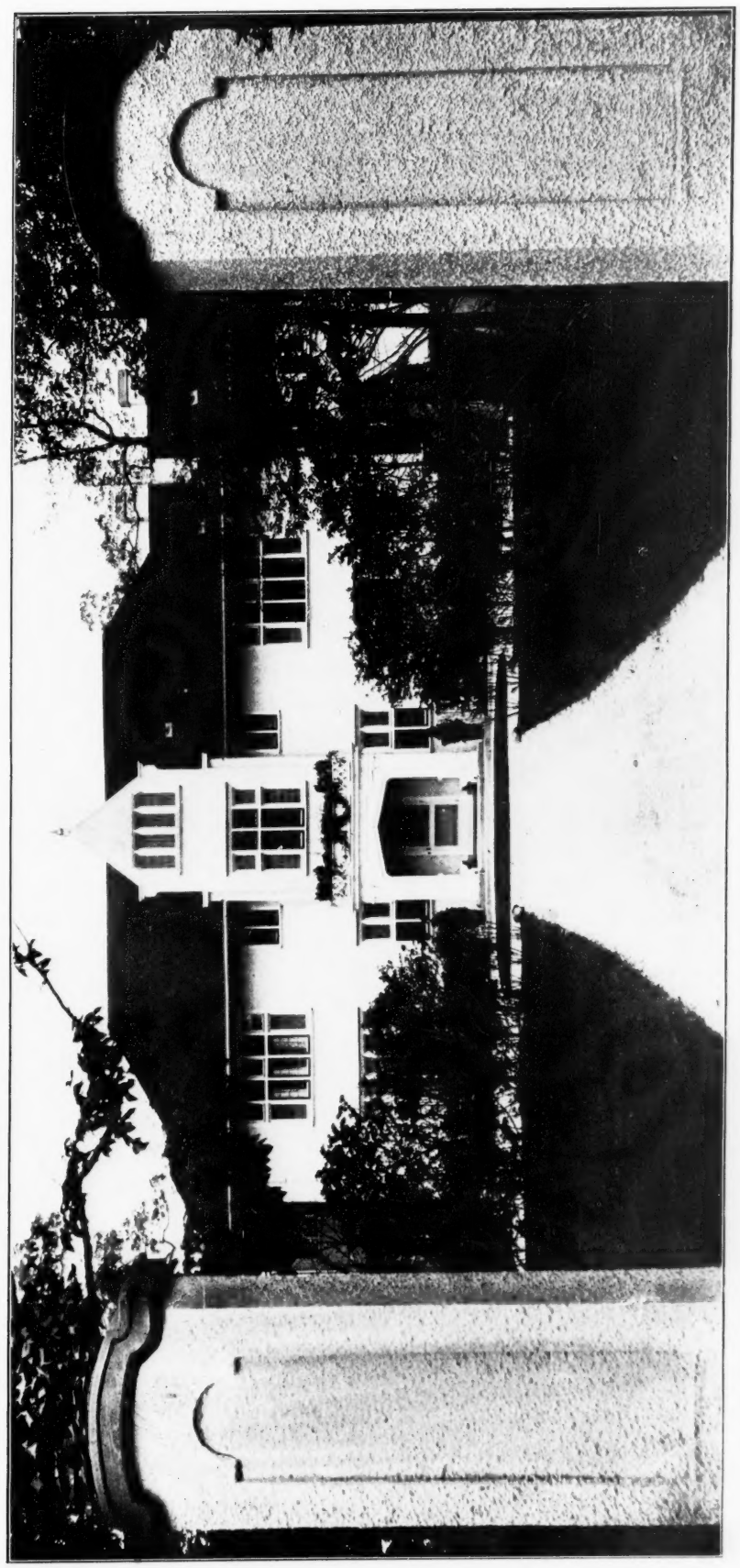
Elzner & Anderson, Archit



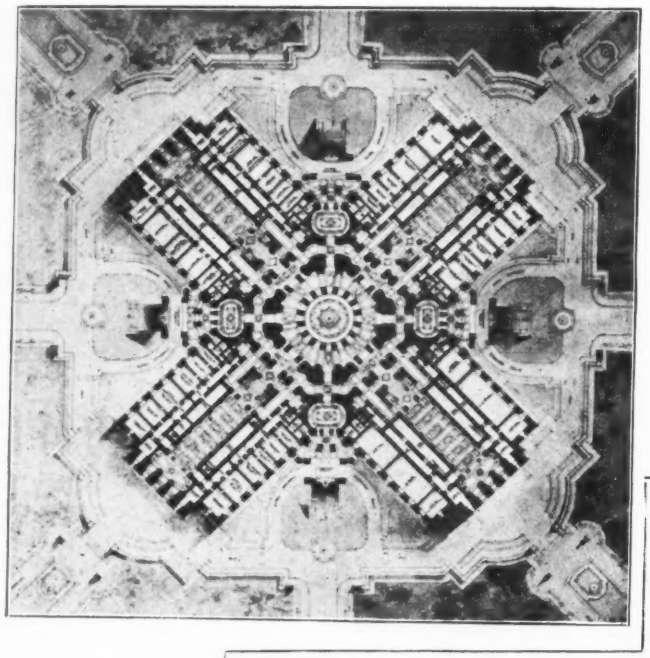
WALNUT HILLS, CINCINNATI, OHIO.

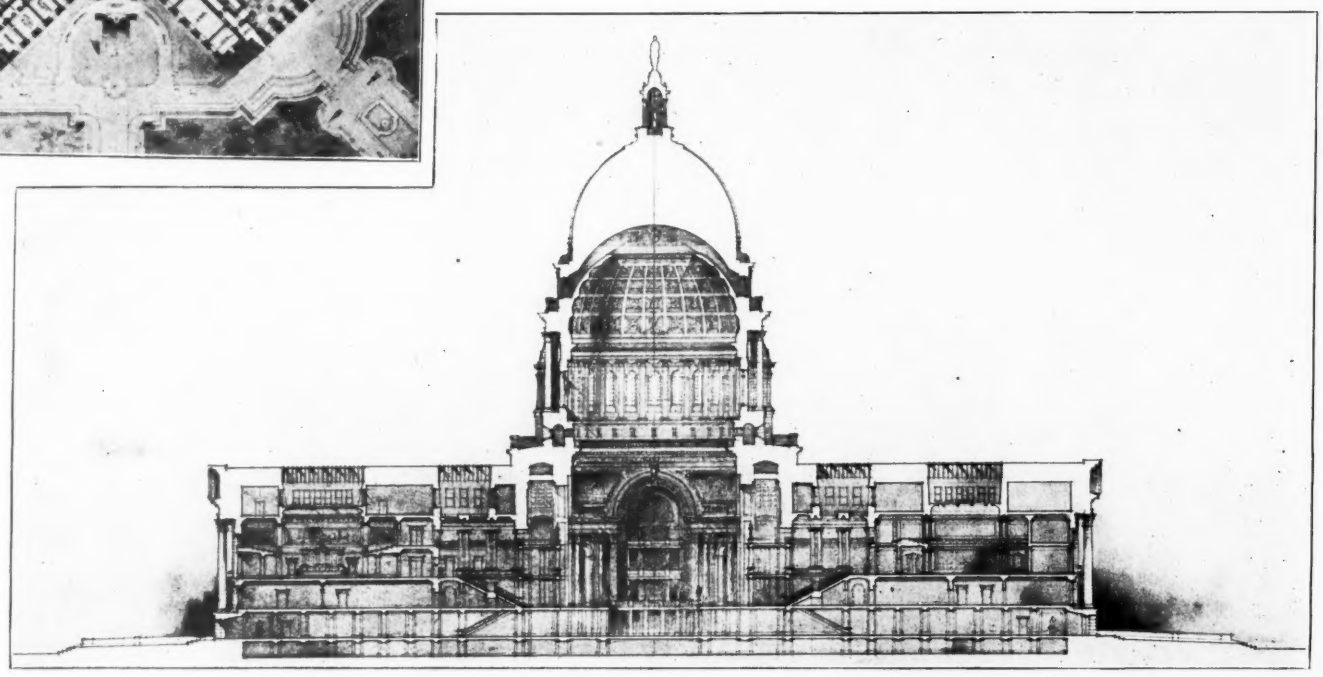
NDERSON, ARCHITECTS.

APARTMENT BUILDING, CHICAGO.



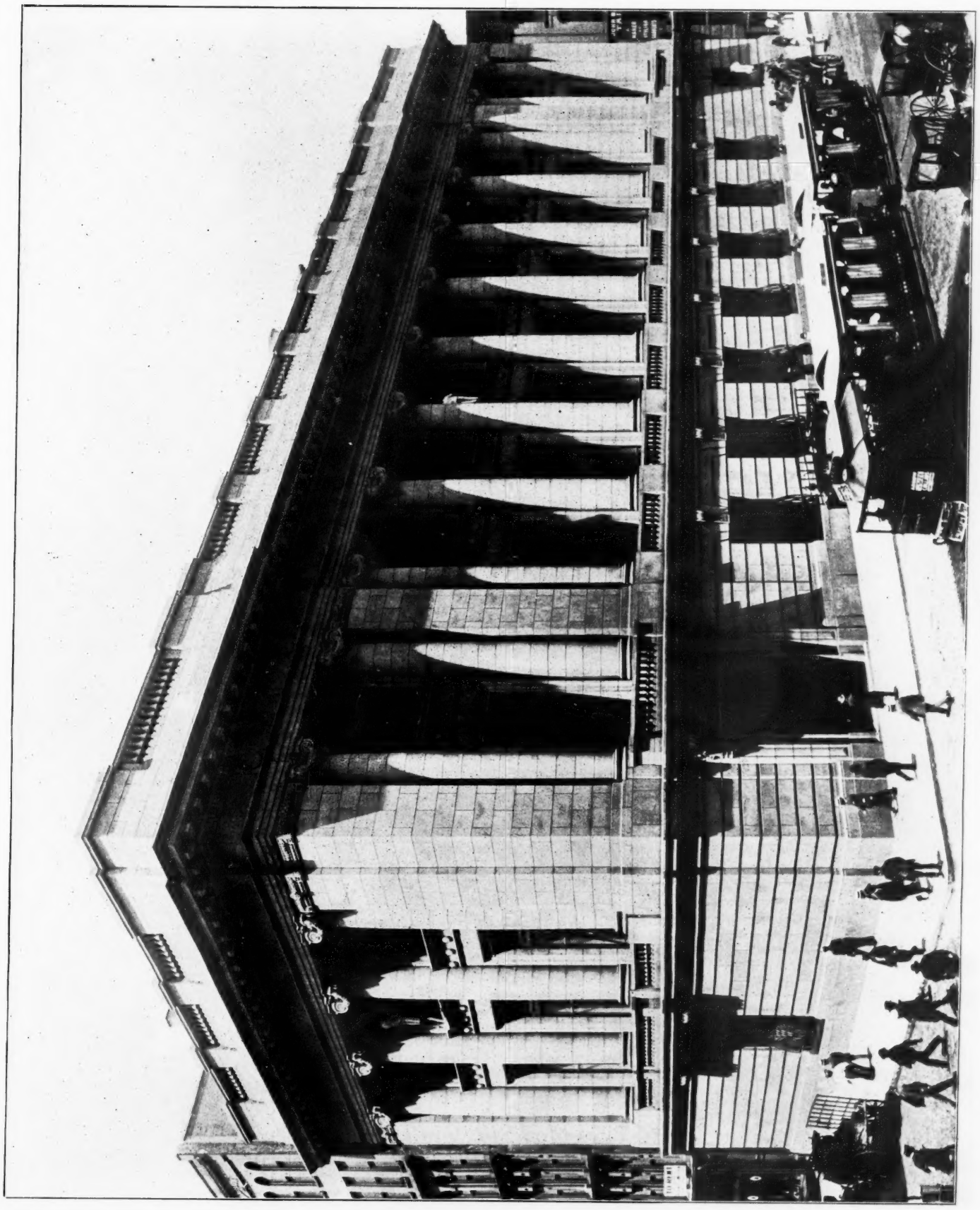
RESIDENCE OF C. B. PIKE, LAKE FOREST, ILL.
ARTHUR HEUN, ARCHITECT, CHICAGO.





SUCCESSFUL COMPETITION DESIGN FOR WISCONSIN CAPITOL, MADISON, WIS.

George B. Post & Sons, Architects, New York.



BUILDING FOR NORTHERN TRUST CO., CHICAGO.

FROST & GRANGER, ARCHITECTS.

PARKS AND GARDENS OF SOUTHERN CALIFORNIA

BY W. L. B. JENNEY, ARCHITECT

WEST LAKE PARK, LOS ANGELES, CONTINUED

AGAIN we rush on, beautiful cottages on either side of the track, most of them with a garden located on a lot sloping up from the railroad track, with tall hills beyond and to the North the mountains still more in the distance. The hills are very pretty. Depressions on the hill sides

IN THE CENTER IS A PRETTY LAKE

and the entrance to the canyon are dotted with cottages grouped amid the trees. The tall cyprus, the graceful pepper, and bunches of the handsome live-oak often becoming extensive groves and giving a rich, deep green to the hill side. We crossed the Arroyo Seco, which is soon to become a beautiful park, crossed or bordered by the Pasadena and Los Angeles boulevard.

OVER A BRANCH OF THE LAKE IS A RUSTIC FOOT BRIDGE

Los Angeles is truly a city of cottages in its residence quarter. They are much varied in design, pleasingly painted and always surrounded by a garden, which often is very pretty. In these gardens, between the house and the street, are frequently some exceedingly fine trees, palms and the magnolia granda flora, with its great beautiful white flowers and other flowering trees, almost unknown in the East.

By the side of the Arroyo, which is already a natural park and a very pretty one, is the little ostrich farm, where 250 gigantic birds are advertised. Its park-like entrance, bordered by palms and large trees is strikingly pretty. Just beyond is Lincoln Park, a residence quarter, with the Monterey Road at the foot of the live-oak hills, on which is being built the Wentworth Hotel. Although a modern and very fine hotel, it is not of the palatial type, cold and magnificent, but cosy, easy and home-like, rich and warm in color, reminding one of the pleasing country hotels one admires so much in parts of Germany and Switzerland.

As we pass on toward Los Angeles, again we find the sloping lot covered with pretty cottages and gardens. When the road rises, or the hills depress, the mountains to the North in the extreme distance come more into view, Mount Lowe, Mount Wilson, Old Baldy, which usually in winter is snow-capped, often contrasting so forcibly with the warm weather in Pasadena. Then there is seen in the

THERE ARE SOME VERY GOOD TREES WITHIN THE PARK

extreme distance the romantic Mount Fernando, just to the south of Camulos, now famous as the home of Ramona, much frequented by tourists.

Our two friends agreed to explore the Arroyo Seco Valley at an early date, get horses and climb well up toward its source. It is so beautiful in its natural state that they anticipated a delightful trip and trust that the park will be put in able hands.

We stopped at the Alexandria Hotel, at the famous Mission Indian Grill Room, a cool restful spot. The light, coming through the ceiling in beautiful ornamental glass panels from powerful electric lights in reflectors, no light is visible.

TALL WATER-GRASS PLANTED IN THE WATER

Everything connected with this grill room is rather remarkable, quite as much so as the Grill Room of the old Palace Hotel of San Francisco, that so many of us remember so well.

[To be continued.]

THE PLANNING OF HOSPITALS.

BY T. M. CLARK, ARCHITECT.

PART XI.

AS a hospital establishment increases in size and complexity, the number of nurses employed in it increases in still greater ratio, and these highly-trained, patient and devoted women should have their comfort and health provided for, either by setting apart a portion of the administration building for their use or by giving them a house of their own in some pleasant part of the hospital grounds, where, during their hours of rest, they may not be reminded of their difficult and trying duties. Many large hospitals not only employ but train nurses, and, where this is done, at least one lecture room must be provided, in which anatomy, physiology and hygiene can be taught, as well as a library and a model kitchen, where students can learn by practice the important art of cooking for the sick, and a workroom for instruction in preparing bandages and similar duties.

Even before the nurses, the servants should be removed, in a large hospital, to a building by themselves, both to keep them out of the way of the nurses, and to avoid the panics which contact with the sick often excites in them. Usually the servants' building will contain the kitchen, which is the scene of their principal avocations, as well as the accessory store rooms, and it should be under easy surveillance from the administration building, to prevent surreptitious removal of supplies. The laundry, which must be large enough to accommodate the necessary machinery, may be connected with the kitchen, or, if the hospital is an extensive one, may occupy a separate building. In this case, however, it is best to have the laundry maids sleep in the kitchen building, and to have the laundry itself only one story high, the steam and dampness from it being unfavorable to the comfort and wholesomeness of bedrooms above. A mortuary house must occupy a secluded corner of the hospital grounds, and with this are usually connected one or more autopsy rooms. Whether an ambulance stable should be provided within the hospital enclosure will depend upon circumstances; but, even without this, there will be men servants, who must have their own quarters.

A large hospital group generally comprises two or more infectious wards, to which can be taken patients from the general wards in whom an infectious disease has declared itself, as well as patients from outside. Such wards are usually made only one story high, and should be isolated from the general wards, without, however, being so separated from the main group as to make it difficult to supply them with fresh air and cooked provisions from the common source, or to give them proper supervision. As the nurses and physicians must pass between them and the administration building, it is desirable to arrange a disinfecting room, where they and their clothing can be quickly purified, as they leave the infectious wards on their way to other duties. The best form of disinfecting room for this purpose consists really of two small dressing rooms, a bathroom and an airtight closet. The bathroom opens into both the dressing rooms, and the nurse, coming from the infectious ward, enters the first dressing room and, leaving her clothes there, passes to the bathroom for a bath in water to which she may add corrosive sublimate solution. While she is in the bath her clothes are put into the airtight closet by an attendant, and fumigated with vapor of formaldehyde; and, on leaving the bathroom, she enters the second dressing room, where she finds her clothes, thoroughly disinfected, awaiting her.

BUILDINGS FOR TUBERCULOUS PATIENTS.

Tuberculosis of the lungs, or consumption, is now generally regarded as an infectious disease, and for this reason tuberculous sufferers are, as a rule, excluded from the general wards of hospitals; yet, as the infectious character of their disease is not very strongly marked, they are not allowed to occupy contagious wards, or free hospitals, which may at any time be needed for cases of diphtheria or smallpox, which require immediate and complete isolation; and the result is that those attacked by the most prevalent of all dangerous maladies, the great majority of whom are refined and delicate persons, are very commonly obliged either to seek refuge in a pauper institution or to endure at home, through many months and amid unfavorable surroundings, the sufferings of a slow and painful disease, which might have been cured if properly treated in the early stages. Of late years the unfortunate position of consumptives in this respect has been recognized, and hospitals and sanatoria intended especially for them are being built in many places; but the number is still far too small to accommodate even the most urgent cases of a disease which in this country destroys one-fifth of all who die; and such hospitals as are provided are not always so well arranged as they might be for the treatment of those who are to occupy them.

No persons are so dependent upon the arrangement of the buildings in which they live as sufferers from tubercular affections. A patient with incipient tuberculosis will often recover perfectly under certain conditions of habitation and surroundings, without medical treatment, where the same patient would get worse and die under different conditions; and the study of the circumstances which experience has shown to be favorable in such cases is of great interest and importance.

It is now known that tuberculosis, whether in the lungs, the joints, the glands or elsewhere, is caused by microscopic organisms, probably of vegetable nature, which, if received into the lungs under suitable conditions, grow and reproduce themselves with great rapidity, very much as the germs of blood-poisoning grow and multiply in a wound, or those of yellow fever in the blood. The tubercle bacillus, which is a tiny rod, about one six-thousandth of an inch in length, is of less robust vitality than some other germs, but it is very virulent in its action, and prepares the way for other organisms, with which it acts to break down the tissues into ulcerous matter, at the same time that it generates a poison which affects the nervous system.

When matter containing the bacilli of tuberculosis falls upon the floors, walls or furniture of a room, and dries there, the germs are set free by the drying of the moisture, and, if disturbed, float in the air, ready to be

drawn by the act of inhalation into the lungs of a fresh victim, where a single germ, if the subject is in a susceptible condition, may start fatal tuberculosis. Moreover, it is agreed by physicians in charge of hospitals for consumptives that patients with tuberculosis are, in certain stages of the disease, very liable to reinfection, and that a fresh infection is likely to have serious consequences. It is, therefore, of the first importance, not only to consumptives themselves, but to the community, that the tubercle germs which they produce should be kept from doing harm.

The tubercle bacillus belongs to the class known to bacteriologists as anaerobic, flourishing most in dark, close places, away from currents of air and from light. In such places it is extremely tenacious of life, retaining its vitality and power of infection for months, and probably for years, even though completely dried; and while protected by a coating of mucus, resisting for a long time the action of powerful chemicals, and even boiling. On the other hand, many experiments have shown that the bacillus, if exposed to sunlight, with free access of air, dies in from ten to thirty minutes, and that even diffused daylight or currents of fresh air in darkness, slowly destroy it.

Under these circumstances it is obvious that tuberculous patients, in order that the germs from their lungs, which, even with the greatest care, can not be wholly prevented from falling on the walls, floors and furniture of the rooms inhabited by them, may not infect either themselves or other people, should be kept as constantly as possible in the sunshine and fresh air, which have been proved to be the only efficient antidote to the poison generated in them.

The importance of sun and air in the treatment of tuberculosis is now generally recognized, but the art of arranging rooms and buildings so as to secure for tuberculous patients the maximum amount of these remedial influences, under the most favorable conditions, has not by any means reached its full development. Most hospitals for consumptives have some rooms, usually those in which the patients sleep, which are exposed to the sun during at least a part of the day; but connected with these we are likely to find corridors, bathrooms, and even more important apartments, which are very imperfectly ventilated, and hardly receive sufficient daylight, much less any sunshine. As the patients are obliged to use these corridors and auxiliary rooms, it is evident that they are exposed in doing so to danger from germs which find these conditions favorable to their development, and which the most assiduous cleaning may not wholly remove.

In addition, however, to presenting in all portions conditions as little favorable as possible to the development of the tubercle bacillus, buildings for the use of consumptive patients may be, and should be, designed with a view to assisting the powers of resistance to infection from the germ, if it should be present. It is to be remembered that the tubercle germ, dangerous and fatal as it is, affects only those who are susceptible to its action.

Medical science has not yet thoroughly investigated the causes and characteristics of this condition of suceptibility, but it is known that dampness from a water-soaked soil, deficient light, the breathing of vitiated air, even if free from contagious germs, and, in general, conditions which depress the vital powers, such as defective nutrition, nervous exhaustion, and, possibly, hereditary tendency, favor the development of tubercular disease from accidental infection; and it is quite practicable, without the sacrifice of other indispensable requisites, to secure in buildings for consumptives, not only a dry soil and dry walls, but pleasant prospects from the windows, attractive dining-rooms and verandas, and an agreeable disposition of the grounds, which, by interesting and cheering the patients, may assist materially in fortifying them, mentally and physically against renewed attacks of their disease.

Consumptives, unlike the inmates of general hospitals, make great use of the public rooms and of the grounds surrounding the establishment. In most sanatoria the great majority of the patients go regularly to the dining-room for their meals, and spend a large part of their time in the verandas or on the grounds, so that there is a special necessity for providing agreeably for them.

The ideal habitation for a tuberculous subject is, therefore, one which, besides being situated in a dry, pleasant and sheltered place, is exposed to the sunshine and fresh air all day long. In such a place no germs, outside of the patient, are to be found, and those which are at work within him are constantly subjected to the most powerful curative agencies known to medical science. On a small scale this ideal can be realized, but where many patients must, for the sake of economy in administration, be collected under one roof, and must be fed, nursed and watched, the problem is not so easy of solution.

Where single patients are to be treated under the modern system, it is very common to set up tents for them, in a garden or on a lawn, or even on the flat roof of a city house, where they can sleep and spend, perhaps, a portion of their waking hours. These tents have undoubtedly been the means of saving the lives of many tuberculous persons, but they are not all that could be desired. The best of them have the upper portion made separately, so as to afford ventilation between the two portions. Where this is not done, the atmosphere in a small tent may become quite foul, as air passes very slowly through thick cotton material, and any tent, unless the whole front is made to throw back, keeps out the sunshine.

It is true that the patients who sleep in tents usually come out into the open air in the daytime, and this probably accounts for much of the benefit which they derive from the treatment; but it is still better to have them spend the night, as well as the day, in a place exposed as much as possible to the sun. Such a place is best provided by some sort of shed. A mere platform, open to the sky, would give the airiest of all bedrooms, and many persons have, under skilful care, been cured of tuberculosis in its early stages by sleeping regularly on flat roofs, or on platforms of this sort built for the purpose in connection with their dwelling-houses. In these cases, however, while an awning could be used to keep off light rain or snow, a severe storm or the winter's cold will oblige the patient to take refuge in the house; and for those who can not well be treated at home, or who need treatment in winter as well as in summer, some permanent shelter is required, which will keep out rain and snow, but not sunshine or air.

One of the simplest and best forms of shed or "shack" for this purpose consists of an enclosure, about twelve feet square, inside, made with studding, covered with boarding and shingles or clapboards, facing south and provided with a roof, covered with shingles, sloping toward the back at an angle of 26½°, which is known to car-

penters as "quarter pitch." The roof in this case, being in a single slope, rises one-half the span, so that the front of the "shack" is six feet higher than the back wall, or about thirteen feet in all.

As the sun at noon on the twentieth day of December, in the latitude of Boston, is 23½° above the horizon, the whole of the back wall of the "shack," if the windows are carried up as high as the construction will allow, is, at this season, in sunshine in the middle of the day, together with nearly all the underside of the roof, the whole of the side walls, and all the floor except a strip at the front which is shaded by the wall below the sills of the windows, if these are raised above the floor. As the sun rises higher by the advance of the season, whatever shaded strip there may be on the floor in front diminishes in width, at the same time that the floor and back wall receive less and less sunshine; but the light reflected upon them becomes at the same time more intense, and windows are placed in the east and west sides of the shack, through which the sun reaches the greater portion of the side walls and all parts of the floor. The front sashes, which are double or triple hung, and are closed only in severe southerly storms, are removed in summer, leaving the south side of the building entirely open.

The side windows are at that season also kept open or removed, as are small windows in the north wall, provided for the sake of securing a current of air through the room in all directions. As it may be desirable to shade the upper part of the front opening in the hottest weather, by awnings or otherwise, independent ventilation of the highest portion of the shack, into which the warmest air rises, is provided by means of a few blind slats in the upper corner of each side wall, immediately under the roof. The floor is raised about five feet above the ground, and the room is reached by outside steps and a door or casement window in the side.

The effect of the ample provision of sunshine in keeping such shacks comfortable in winter is remarkable. Without any means whatever for warming them artificially they can be occupied, as experience has shown, through the coldest winters without complaint and with great advantage to the patients, who, of their own choice keep their front windows open, and often the side ones also, when the thermometer outside stands at zero Fahrenheit or below.

A different type of shack has no front windows, the south wall consisting simply of a range of posts, like those of a piazza, while the side walls are often hinged, so that they can be swung open. Where this form is adopted it is necessary to keep the roof low in front and to overhang it considerably, to keep out storms, or to provide heavy curtains, which can be let down for the same purpose. In either case the sunshine is kept out, so that, although the piazza shack is successfully used through the coldest winter weather, there are advantages in the other form.

In both cases the construction is of planed timbers, exposed inside without plastering. There are, of course, plenty of lodging-places for dust in the joints of the timbering and boarding which are inaccessible for cleaning; but the aeration is so abundant, and the sunning, in the first type, so complete, that this does not seem to be a serious matter, especially with establishments in the country, removed from extraneous sources of noxious dust.

Experienced physicians generally agree that if all tuberculous patients could be treated in shacks of this sort their recovery would be greatly promoted; but as no lavatories or proper toilet appliances can be used in winter, in the Northern States, without artificial heat, it is necessary to arrange warmed bath and toilet rooms within easy reach.

Such a toilet and bathroom, warmed by a stove and opening, by a door in the rear wall, into a piazza shack for eight patients, has been very successfully used at the Loomis Sanatorium, and a somewhat similar arrangement, for a larger number of patients, is adopted at the Sanatorium of the Boston Children's Hospital, at Wellesley, Mass. Where the shacks are arranged for single patients, as at the Millet Sanitorium, an outside platform connects them and gives access to the necessary toilet rooms. In all these cases the dining-room, doctor's office and other rooms connected with the administration of the establishment are in a separate building near by, the patients finding no inconvenience in walking to them through the open air in any weather.

Where a large number of patients must be provided for, and where it is desired to receive all curable cases of tuberculosis and to treat them with reasonable economy of administration, it is necessary, not only to have warmed toilet rooms within their reach, but to arrange sheltered passageways, through which the nurses and maids can pass to and from the patients' rooms without unnecessary exposure to snow and storms, and by which the feebler patients can reach under cover the dining-room, the medical bath, doctor's office, throat room, matron's office, reception room, and other portions of the administration department.

If the patients' rooms face south, as they should, it follows that the corridor or passageway by which they are reached must be on the north, and it will therefore be shaded during the greater part of the day. Some sanatoria are built with the wings containing the patients' rooms curved, or set at an angle with each other. This gives a little more sun in the corridors, but subtracts materially from that in the patients' rooms, while it cuts off a certain amount of air, so that for sanatoria for consumptives a straight front facing due south, so that all the bedrooms receive the full sun at midday, is to be preferred.

Although the corridor, by this arrangement, has its main outside wall facing due north, so that, except in summer, it receives sunshine only through the end windows, it is quite practicable in a one-story building to place skylights over the corridor, or to raise its ceiling so as to give room for vertical windows on the south side, above the roof of the patients' rooms. Such sashes can be more freely opened in showery weather than skylights and admit quite as much sunlight, besides giving better cross ventilation in connection with the windows in the north wall of the corridor, and heating the corridor less in summer.

In most cases, however, sanatoria for a considerable number of patients are built two stories high, for economy in construction and administration, and, as we shall see, the roof, even of a one-story building, is frequently utilized to advantage in other ways, so that a corridor with south windows, although entirely practicable and often desirable, especially for patients who are too feeble to walk out of doors, but need a little exercise and change of scene, seems not to have been actually attempted in any existing sanatorium.

[To be continued.]

MUNICIPAL IMPROVEMENTS.

BY ALBERT KELSEY, ARCHITECT.

CHAIRMAN OF COMMITTEE OF EXPERTS OF THE ART FEDERATION OF PHILADELPHIA.

PART XII

THIS is so with Woodward avenue in Detroit, Smithfield street in Pittsburg, and in fact with most of our cities, and it is because it is so, because nearly the whole length of all our water-fronts are so remote and detached that they remain unimproved and become such an easy prey to the railroads.

The clipping quoted would have been laughed at by the denizens of Algiers, LeHavre, Rouen, Quebec, Antwerp, Boulogne, Genoa, Palermo, Naples, Marseilles, etc., if it had been printed in one of their papers, but to us it is actually a reminder that there is a port with miles and miles of water-side property within the city limits. The people of those cities see and enjoy their harbors daily; they find not only unrestrained commercial opportunity on a continuous line of publicly owned docks, but recreation as well. It is there, by or above the busy shipping, that as a matter of course, the most refreshing promenades are found, and it is upon these that abutting streets discharge their weary populace for a breath of pure fresh air. There, idlers find delight at all times; there fashion airs itself during the afternoons; there congregate the poor after the day's work is over; and to them as a relief to life in dull and congested neighborhods it proves an effective counterpoise. Indeed, to those residing in all nearby settlements, it is a place of magnetic attraction, where they are free to dream in the twilight, at the hour when all out of doors is loveliest; when sea and sky is mother of pearl and shipping and shore are ablaze with sunlight, and during dimmer hours when the moonlit harbor is bewitched with a flood of silvery light. Surely for Americans to enjoy such simple pleasures, with comfort and convenience, from a well ordered promenade and from a well placed public bench, is no more than the humblest have a right to demand and expect.

No rules but of the most general character can be laid down for the planning of harbor thoroughfares. Local considerations, such as the topography, the seration of the shore, and the nature of the commerce to be handled, determine their individuality, their possibilities, their limitations. Of course the easiest and most direct communication is called for: to provide which they must be interwoven with the general arterial system to be productive of the greatest usefulness as perimeters of distribution. Steep streets leading to them are to be avoided, and the thoroughfare itself (part roadway, part railway, part parkway) must be level, broad and paved for the heaviest traffic.

Leading from it, where the shore is steep, low grade zigzag roads, or curved ramped streets gently rising to the upper town cut up the land advantageously, insuring small open spaces and fine view points where public benches and shade trees should be grouped. Where it is too steep for these purposes, the hillside should be made to bloom with a succesion of hardy wall plants and shrubs.

LUGGARO.

The heights at either Duluth, St. Paul or Pittsburg, treated in such a manner, would become convenient resting points of much interest. San Francisco and Portland, Maine, are among the natural harbors of the world that might be made to rival the bay of Naples; while on the Hudson there are landings that could be made as efficient and as pleasing to look upon as any bordering the Swiss lakes, whose treatment everywhere—in every village, town and city—suggests the painstaking work of an honest, intelligent administration seeking only the greatest benefits for the common good.

With as promising natural advantages as any abroad, is it to be doubted that we shall sooner or later study our problems and their treatment with impartiality? Surely it is a matter of impartiality that is required rather than one of intelligence, for were it only a matter of brains the work would have been studied and executed long ago.

[To be continued.]

SANITARY ENGINEERING

BY J. PICKERING PUTNAM, ARCHITECT

PART XIII

THE air of sewers is constantly being filtered of germs of all kinds, and tends to be more and more effectively rid of them in direct proportion as their area of wet surface bears to the volume and direction of the air currents which pass through them.

The earliest researches in this field to which I shall call attention, chiefly on account of their extraordinary interest and importance, are those of Dr. Niel Carmichael, of Scotland.

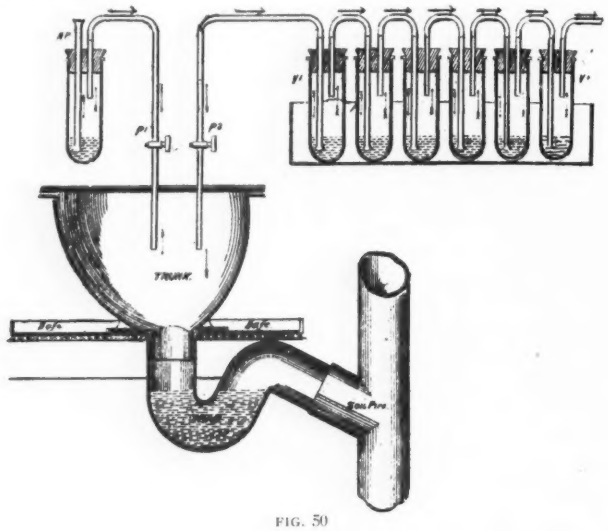


FIG. 50

Figs. 50 and 51 show some of the forms of apparatus used by Dr. Carmichael to ascertain the affinity of water for germs. The first shows a water-closet trap connected with an ordinary soil pipe which was ventilated by a 2-inch vent pipe up to and through the roof. The lower end of the soil pipe passed untrapped and unventilated into the drain. The mouth of the sewer was submerged at high tide so that sewer gases tended to be pressed back toward the houses, presenting as trying conditions as possible.

A glass flask containing a culture solution of hay infusion was connected on the one side with a U-shaped glass trap containing water and on the other with an aspirator as shown. The hay infusion and the water in the U-shaped trap were both sterilized by boiling. The U-shaped trap was connected on its other side with the soil pipe side of the water-closet trap. It will be seen from this arrangement that any germs coming from the soil pipe which passed through the water trap would be carried in the air current over to the infusion and would cause it to putrefy. But no such particles passed through the trap seal for the hay infusion remained perfectly clear, though the experiments were continued for five months. The tests were made both with and without the aspirator, and various kinds of culture liquids were used.

Tests were also made with the U-shaped trap omitted, and in these cases the infusions began to putrefy in a few days, showing that the water trap really prevented the germs from passing.

These experiments seemed conclusive, but lest it might be objected that germs might rise from the liquid of the trap and fail to be carried over, or that an ordinary water closet trap might behave differently from the glass one employed, Dr. Carmichael made a still more crucial series of tests as follows: Nitrogen bulbs were charged with a strong cultivating liquid called Pasteur's solution and sterilized. The lead water closet trap, connected with the soil pipe, was also sterilized by heating it to 350° to 400° F., and the bulbs were connected with the house side of the trap with an air tight connection. The other end of the bulb vessel was connected with the aspirator. In order to let air into the trap chamber above the water seal a filtering tube was used so that no germs could come to the bulbs unless they passed over the water closet trap seal. The whole apparatus was most carefully and thoroughly sterilized. The filtered air was drawn by the aspirator into the chamber over the trap seal and then bubbled continuously through the liquid in the bulbs for from twenty-four to thirty-six hours, and the bulbs were then allowed to stand in a warm room at 75° to 100° F. for several months, and the experiments were repeated in the most rigorous and careful manner. The liquids in all the tubes and flasks, though kept for from two to five months at cultivation temperature, remained perfectly clear, and even when examined with a most powerful microscope used for germ studies and multiplying 900 diameters, exhibited no trace of life. Dr. Carmichael concludes as follows:

"Water traps are, therefore, for the purpose for which they are employed, that is, for the exclusion from houses

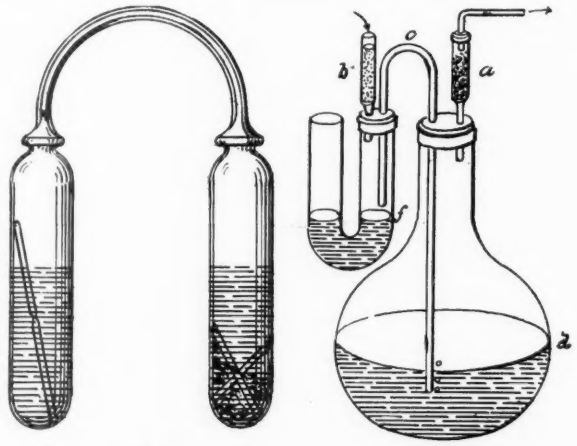


FIG. 51 FIG. 52

of injurious substances contained in the soil pipe, perfectly trustworthy. They exclude the soil pipe atmosphere to such an extent that what escapes through the water is so little in amount and so purified by filtration as to be perfectly harmless, and they exclude entirely all germs and particles, including, without doubt, the specific germs or contagia of disease, which, we have already seen, are, so far as known, distinctly particulate."

The two glass vessels shown in Fig. 51 illustrate the experiments made by Dr. Carmichael to see if germs would rise from the surface of water at rest. He placed cultivating liquid in each of the tubes and connected them together at the top by a rubber tube. Into each tube had been placed a small capillary tube filled with a putrid liquid and hermetically sealed at both ends. The cultivating liquid was sterilized in both large tubes. Then one of the small capillary tubes was broken by shaking and its

putrid contents thus mixed with the infusion in its enclosing vessel. The germs did not pass over into the other vessel, even though the test was continued for five years uninterruptedly.

The experiments of Professors Pumpelly and Smyth for the National Board of Health at Washington are extremely interesting and fully corroborate those of Carmichael.

In their first series made to determine whether bacteria or other particulate matter can disentangle themselves from a liquid, water, sewage and putrefied substances suspended in a bent tube over a sterilized beef infusion in a room where the temperature ranged between 20° and 35° Centigrade. The flask containing the infusion was closed air tight by a rubber stopper through which the tube passed which held the sewage in a small bowl or trap at its lower end. The stopper contained also a small asbestos filled filter tube. In this form of the experiments the air around the sewage was in a state of rest.

In another room the apparatus shown in Fig. 52 was used to investigate whether germs could be taken up from a liquid at rest by a current of air. The sewage was placed in a U-shaped tube, which formed the trap and was connected with a flask containing the culture liquid by means of narrow tubing, as shown. This tube passed through rubber stoppers which closed the tops of the flask and one arm of the trap. An aspirator tube packed with an asbestos filter was connected with the flask through its rubber stopper and air was drawn at any desired rapidity through the apparatus, being filtered before entering the trap by an asbestos filter in a small glass tube connecting with the trap through its rubber stopper.

Finally a third form of apparatus was used to see if a liquid can part with germs when bubbling.

The results of these experiments were given in the report as follows:

"At normal summer temperatures no germs were given off from the decomposing liquids whenever their surfaces remained unbroken, even though in some of the experiments the air was continuously conducted over them in a slow current. When the surfaces of the liquids were broken, however, by the bursting of bubbles, germs were invariably given off and the sterilized infusions infected, no matter how slowly the aspiration was conducted."

The experiments of Naegeli, Wernich, Miguel and many others have clearly shown also that under normal conditions of temperature germs are never given off to the surrounding air through the evaporation of a liquid containing them, nor from thoroughly moistened sand or solid matter of any kind.

The recent researches of Laws and Andrewes for the London County Council, and of others, show first that the number of germs of all kinds in sewer air is much smaller than in the air of the streets above them, and that this is due to the fact that the germs come in contact with the sewage and damp walls of the sewer and drain pipes, from which they can not under normal conditions again escape. Second, that the bacteria found in sewer air are of the same kind as those found in the outer air above the sewers, showing that the bacteria come, therefore, not from the sewage, but from the outside air above them. Third, that disease germs are unable to live long in sewage, where myriads of bacteria of decomposition, hostile to them but more pathogenic to man, abound; and that as a matter of fact disease germs have not been found in the air of sewers in the very careful experiments so far made.

The methods for the study of micro-organic life in air are of comparatively recent date, and are daily being improved. According to Roechling*, up to the time of his writing, in about six sets of investigations into the bacterial flora of sewer-air, have within recent years been made and from them the results are in complete corroboration of other researches made before by less perfect methods and apparatus.

Splashing of sewage, as when a branch sewer enters another or a main sewer with a high fall, may cause a fine state of division of sewage in virtue of which germs may be carried some distance through the air, "even fifty or sixty yards," according to Laws, from which our remedy lies in so arranging the connections as to avoid splashing. If the sewage falls against the inner curved surface of the sewer it may be arranged to do this without splashing even for a considerable height. The experiments of Laws showed that a branch drain emptying its sewage into an egg-shaped sewer 11 feet high by 9 feet wide from about the middle of its height produced practically no effect upon the number of micro-organisms in the sewer air.

The experiments of Laws in London and Ficker in Breslau seem to show that germs can not be given off from the slimy skin which forms on the inner surface of sewers even above the water line. "It is really remarkable," says Laws, "to find that no organisms are given off from the walls of a sewer which has been empty and open to the air at both ends for such a lengthened period as twelve days. The sewage with which the sewer had been kept full for several periods of twenty-four hours would contain no less than three to four millions of organisms per cubic centimeter (about three-eighths in cube), and immense numbers of these must of necessity have been clinging to the walls of the sewer. * * * The velocity of the air current used in the above experiments was 5 feet and 15 feet per second respectively, the latter being far in excess of any current that would normally obtain in a sewer."

Ficker‡ found that a current of air of several yards a second could not lift up germs from a half moist soil, nor even germs which had dried on several substances and adhered to them.

Hesse† experimented to see how far germs could be carried in air currents in pipes and sewers before falling again and adhering to their sides. In one experiment with a pipe a yard long, coated with nutritive gelatine, he found that the air current deposited a large number of bacteria on the first quarter, less on the second, still less on the third, and none at all on the last quarter. Ficker experimented in this direction with 4-inch pipes and found the germs were carried as much as twenty-three feet.

Messrs. Laws and Andrewes went so far as to classify elaborately and comparatively the various kinds of germs found in the outer air, in sewer air, and in the sewage itself, and they found the same kinds in sewer air as in the outer air, but a totally different kind in the sewage. They even go so far as to say that so far as they are aware not

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* "Sewer Gas and Its Influence Upon Health," by H. Alfred Roechling C. E., London, 1898.

‡ "Shadlichkeit der Canelgase," 1896."

† "Bemerkungen zur Quantitativen Bestimung der Mikro-organismen der Luft," 1886.

a single colony of any of the many species which they found predominating in sewage has been isolated from sewer air. To give an idea of the care with which these investigations were carried it is interesting to glance at a small portion of the large list of micro-organisms recorded in them. Those in the outer air were classified as (1) micrococci, (2) molds, (3) bacilli, (4) torulae, and (5) cladothrices. Of each of these classes of germs the several different kinds were recorded as found in the outer air. Those of the micrococci were found.

(1) Sarcina lutea.
(2) Micrococcus aurantiacus.
(3) Micrococcus candicaus.
(4) Diplococcus citreus conglomeratus.
(5) Diplococcus roseus.
(6) Sarcina rosea.
(7) Pediococcus acidi lactici.
(8) Micrococcus acidi lactici.
(9) Micrococcus flavus desidens.
(10) Diplococcus flavus liquefaciens tardus.

[To be continued.]

OUR ILLUSTRATIONS.

Apartment house, Chicago.

High school, Pasadena, Cal. Stone & Smith, architects.

Residence of Clayton Garvey, Pasadena, Cal. F. L. Roehrig, architect.

Residence for F. H. Holtz, Detroit, Mich. Albert Kahn, architect.

Residence for Julius Haas, Detroit, Mich. A. W. Chittenden, architect.

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Building for Northern Trust Company, Chicago. Frost & Granger, architects.

Successful competition design for Chattanooga (Tenn.) railway station. Donn Barber, architect, New York.

Chapel, Columbia University, New York. Howells & Stokes, architects. Three exterior views and plan are given.

Cincinnati Country Club, E. Walnut Hills, Cincinnati. Elzner & Anderson, architects. Two exterior, two interior views and plan are shown.

United States Postoffice and Custom House, Indianapolis, Ind. Rankin & Kellogg, architects, Philadelphia. Numerous exterior, interior and detail views are shown. Exterior statuary by J. Massey Rhind, sculptor, New York.

Successful competition design for Wisconsin Capitol, Madison, Wis. George B. Post & Sons, architects, New York. The program under which this competition was held was prepared by Architect Lew. F. Porter, secretary of the Capitol Commission. The competition was instituted for the purpose of selecting an architect to prepare "a complete and harmonious plan for a state capitol building, including a dome, to be erected section by section as the needs of the state from time to time may require and the legislature direct." Five competitors were invited to submit plans. Each received $1,200. In the case of the successful competitor this payment is to apply on account of his commission of 5 per cent on the cost of construction. The program contained arbitrary conditions as to general ground plan, style of dome, etc. The design of George B. Post & Sons was found to meet most nearly the requirements, and the firm was selected as architects for the building. No limit of cost is stated in the program.

Among the improvements to be made in the United States Capitol building at Washington, for which appropriations were made at the last congressional session, is the equipment of the principal entrances with six revolving doors. The revolving doors will be installed in the fall of this year.

GLASS MOSAIC.

THE most vigorous—the most lasting form of mural decoration and the one best fitted for the complement of the monumental treatment of stone porticos, vaulted passages, tombs, etc., must certainly be that form which is most nearly akin to the stone in its nature, that is, mosaic.

Fresco, even when handled in a large enough and strong enough manner to make it fit company for the stone, is temporary and unstable, at best, in the climate of our country.

Marble mosaic is familiar to everyone as floor and wall decoration, but the fact that most of the mosaic in this country is carried out under the direction of a master mechanic makes owners and architects unwilling to risk any departure from the stereotyped designs which are reproduced with machine-like accuracy and have the advantage that they can be depended upon to be just what is expected of them. In the comparatively few instances in this country where the design or workmanship of marble mosaic attracts notice as being characteristic of the material, it does so because the architect, either from having made a specialty of its study or in desperation at the prospect of having his wall spaces appear to be covered with oilcloth, has taken the matter in hand and supplied the knowledge (or backed it in someone else) which is lacking in the ordinary product.

Through being less familiar, glass mosaic is not so likely to be passed by unnoticed. Possibly the greater variety of colors and the glitter of the gold help to force the uncertain exclamation from the would-be critic and attract the attention, whether he approve or not, of the student. The fact that it so surely does attract attention, proves the importance of having it handled by those learned in its possibilities for good. High explosives and poison are useful and safe when in the hands of those who have made a life study of them. A realization of the dangers in glass mosaic colors is undoubtedly accountable for the weakness of the modern glass mosaics.

Who would think of the tinted naturalism and portraiture of the present accepted form of glass mosaic as being made of the same materials as the noble, dignified, vigorous decoration of the crypts at Ravenna, and the vestibule of St. John Latterain (which latter has lost much of its force through restoration.)

Ruskin says in his "Stones of Venice," "There are two means of delight in all productions of art—color and form. The most vivid conditions of color obtainable by human art are those works in glass and enamel." And, of the St. Mark's mosaics, "a vast illuminated missal, written within and without in letters of enamel and gold." But we expect to get all this today at an expense of time and money so ridiculously limited that the master who really appreciates the vital qualities necessary to securing similar results, must retire from the field, as the supply of intelligent assistants is positively limited. For, from practical experience, the trained modern Italian mosaic setter has the crimes of his craft so deeply rooted that it is easier to get the proper work from a novice of clever hand and adaptable mental faculties. This, however, means slow work or time and expense. For these reasons such works as are shown in our illustrations of glass mosaic in the Federal building of Indianapolis, which are by the New York firm of Heinigke & Bowen, mean much to this country and add another proof of deep study and insight into the mysteries of ancient art lore.

In this, as in all forms of decoration, the most powerful enemy of good results is commercialism. A contract is not considered complete today without a bond being signed for a money forfeit, in case the work be not completed by a specified time. This alone, is enough to discourage an artist, if he has not already succumbed to the news that, if he can not underbid every master mechanic with an organized factory, he will have labored in vain on his designs and samples, which have cost so much in thought, labor and research. The exception to this rule was the notable contract in which the late czar was allowed, as a mark of special favor, to pay the Vatican $400.00 per square foot for glass mosaic installed in St. Petersburg.

If such conditions had prevailed when our standards were created and the masters had been forced to divide their attention between the real work and the petty annoyances incident to keeping up to schedule, would our standards have been so high? Possibly they would, but it is safe to be thankful that Rome was not built in a day, or even under a modern contract bond, and that the master decorators of those days were not forced to compete with master mechanics for the large decorating contracts.

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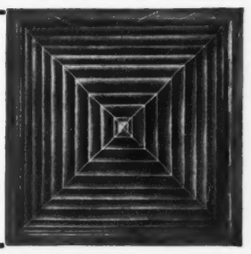

COMPETITION, UNION THEOLOGICAL SEMINARY.

THERE has been issued the program of a competition for the selection of an architect and the procuring of a general plan for the Union Theological Seminary in the city of New York. The plan is for a new group of buildings which the seminary proposes to build at One Hundred and Twentieth street and Broadway, adjoining Columbia University. Four architects have accepted the invitation to submit designs, namely: Cram, Goodhue & Ferguson; Cass Gilbert, Lord & Hewlett and Palmer & Hornbostel. The committee desires also designs from other competent architects. Blank forms are provided for the application of such architects as wish to enter the competition. The forms may be obtained from Wm. M. Kingsley, 700 Park avenue, New York City. The four invited architects and four others will each be paid a fee of $800. The architect selected will receive the commission to execute the buildings. Prof. Warren P. Laird is the professional adviser. Judgment will be rendered by a jury composed of the adviser and Walter Cook and Robert S. Peabody.

ASSOCIATION NOTES.

T SQUARE CLUB OF PHILADELPHIA.

The club proposes to hold a joint exhibition with the Pennsylvania Academy of the Fine Arts in the galleries of the Academy during the month of December next. The exhibition will cover the field of architecture in its broadest sense, and will include all the allied arts, of which she is the mother. As in the twelve previous annual T Square Club exhibitions, the department of architectural design will dominate. It will include not only the technical drawings of the most distinguished American and European architects produced during the last year, but will also include a large number of models and photographs of finished work. The department of mural painting will be conducted with the co-operation of the National Society of Mural

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ASSOCIATION NOTES—Continued.

Painters. This will include a large number of mural paintings by the foremost members of the profession. Photographs of executed work too large to be hung in the galleries, and a large collection of preliminary sketches and cartoons. The department of architectural sculpture will be conducted with the co-operation of the National Sculpture Society, and will include full size and sketch models of the most important work of the year. The department of landscape architecture will be conducted with the co-operation of the American Society of Landscape Architects, including models, photographs and drawings. The department of arts and crafts will be divided as follows:

Art metal work, wrought and cast iron, bronze work, lighting fixtures, hardware, lead work. Terra cotta, architectural details, garden pottery, tiles. Architectural woodwork, cabinet work. Stained and leaded glass. Interior decorations, drawings. Garden decorations, in all materials, shrubs and flowers. The juries of selection will admit only works of the first importance. Juries of award, composed of the most distinguished workers in the several departments, will be appointed at the opening of the exhibition, but not announced until after the awards are made. It has not been determined as yet, what form these awards will take. Believing that the intrinsic value of an award bears little relation to its importance, the award may consist only of a public announcement and a personal notification. All inquiries in regard to this exhibition may be addressed to either of the undersigned. T. Square Club, C. L. Borie, Jr., secretary, 251 South Fourth street, Philadelphia, Pa. The Pennsylvania Academy of the Fine Arts, John E. D. Trask, Secretary, corner Broad and Cherry streets, Philadelphia, Pa.

NEW YORK CHAPTER, A. I. A.

At a special meeting of the executive committees of the New York Chapter of the American Institute of Architects, the Society of Beaux Arts Architects, and the Architectural League of New York, the following resolutions were unanimously adopted, and the secretary was instructed to forward a copy of them to Mrs. Stanford White, Messrs McKim, Mead & White, the architectural periodicals and the Associated Press:

Resolved, That the executive committees of the New York Chapter of the American Institute of Architects, the Society of Beaux Arts Architects, and the Architectural League of New York desire, in the name of their respective societies, to express their sense of the great loss which the profession and the art of architecture have sustained in the death of Stanford White. His quick and generous appreciation of all that is beautiful, even beyond the field of his immediate profession, was so genuine that the influence of his work will long continue to be a stimulus to the artistic development of this country. Only those of us who have been closely associated with him professionally can fully appreciate the love and enthusiasm with which he devoted himself to art. His was a commanding personality, and whatever he produced had the touch of genius.

CHICAGO ARCHITECTURAL CLUB.

At a meeting of the executive committee of the club, held July 23, 1906, the following officers were elected: Melville P. White, second vice-president, to fill unexpired term of Paul V. Hyland, resigned; Walter G. Kohfeldt, secretary, to fill unexpired term of Joe W. Wilson, resigned.

THE SIGNING OF BUILDINGS.

St. Paul, Minn.

Answering your favor as to whether it is desirable for architect's names to be publicly associated with their buildings, and if so how can this best be accomplished, would say in my opinion it is as proper and appropriate for the name of the architect to be attached to his work as that of the sculptor or painter, particularly in connection with important work, and that the name of the architect of a public building should be inscribed on a tablet properly placed in the interior of the building or if the building is of masonry construction, incised on a tablet properly located on the exterior.

Wanted.—Experienced draftsman to take charge of office; competent in designing and construction of first-class work; also experienced in coloring and perspective work. Address E. J. Eckel, architect, F. A. I. A., St. Joseph, Mo.

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Air Purifying and Cooling System.
Thomas & Smith, Chicago.

Architectural Iron Works.
The Winslow Bros. Co., Chicago.

Architectural Photographers.
Taylor, J. W., Chicago.

Architectural Schools.
University of Pennsylvania, Philadelphia, Pa

Architectural Views.
Taylor, J. W., Chicago.

Bath Cocks (Combination).
Union Brass Works Co., Boston, Mass.

Bath Room Fixtures.
Standard Sanitary Mfg. Co., Pittsburg, Pa

Bath Tubs.
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Brass Goods (Plumbers).
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Builders' Hardware.
The Stanley Works, New Britain, Ct.
The Yale & Towne Mfg. Co., New York.

Builders' Sundries.
The Stanley Works, New Britain, Ct.
The Yale & Towne Mfg. Co., New York.

Building Directory.
Tablet & Ticket Co., Chicago.

Carpets and Rugs.

Cements.
French, S. H. & Co., Philadelphia.
Atlas Portland Cement Co., New York.

Concrete Steel Frame.
Expanded Metal & Corrugated Bar Co., St. Louis, Mo.
Trussed Concrete Steel Co., Detroit, Mich.

Conduit.
National Fireproofing Co., Chicago.

Cordage.
Samson Cordage Works, Boston, Mass.

Decorators.
Sturdy, Jos. F., Chicago.

Drawing Material and Implements.
Abbott, A. H. & Co., Chicago

Drinking Fountains.
Standard Sanitary Mfg. Co., Pittsburg, Pa

Elevators.
The J. W. Reedy Elevator Co,, Chicago.
Otis Elevator Co., Chicago.

Enameled Iron (Plumbers' Ware).
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Fire Escapes.
Dow Wire & Iron Works, Louisville, Ky.

Fireproofing.
Columbian Fireproofing Co., New York, Pittsburg and Chicago.
Illinois Terra Cotta Lumber Co., Chicago.
National Fireproofing Co., Chicago.
The Roebling Construction Co., New York.

Floor Polish.
Butcher Polish Co., Boston, Mass.

Gas and Electric Fixtures.
Tietgen, Falk & Co., Chicago.

Hardware.
The Yale & Towne Mfg. Co., New York.

Hollow Block.
National Fireproofing Co., Chicago.

Interior Decoration.
A Monthly Publication, New York.

Interior Finishes.
Adams & Elting Co., Chicago.

Lamps.
Neuhauser, D.

Laundry Tubs.
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Lavatories.
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Lead Pipe.
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Locks.
The Yale & Towne Mfg. Co., New York.

Mail Chutes.
Cutler Manufacturing Co., Rochester, N. Y.

Marble.
Standard Sanitary Mfg. Co., Pittsburg, Pa

Metal Ceilings.
Berger Mfg. Co., Canton, O.

Mortar Colors.
French, S. H. & Co., Philadelphia, Pa.

Paints, Oils and Varnishes.
Adams & Elting Co., Chicago.
Joseph Dixon Crucible Co., Jersey City, N. J.
Muralo Co., New Brighton, Staten Island.
New Jersey Zinc Co., New York.
Smith, Edward & Co., New York.

Pencils.
Joseph Dixon Crucible Co., Jersey City, N. J.

Plumbers' Fittings.
Federal Co., Chicago.
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Plumbers' Ware, Porcelain Enameled.
Federal Co., Chicago.
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Railroads.
Chicago & Alton Ry.
Denver & Rio Grande R. R.
Missouri Pacific Ry.
Northern Pacific Line.
Santa Fe Ry.

Range Closets.
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Recording Instruments.
Bristol Co., Waterbury, Ct

Reinforced Concrete Construction.
Expanded Metal & Corrugated Bar Co., St. Louis, Mo.
Trussed Concrete Steel Co., Detroit, Mich.

Revolving Doors.
Van Kannel Revolving Door Co., New York

Roofing Tin.
Follansbee Bros. Co., Pittsburg, Pa.

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Sinks, Porcelain Enameled.
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Spring Hinges.
Smith & Egge Mfg. Co., Bridgeport, Ct.

Store Front Construction.
J. W. Coulson & Co., Columbus, O.

Terra Cotta.
Northwestern Terra Cotta Works, Chicago.
Winkle Terra Cotta Co., St. Louis, Mo.

Trees.
Peterson Nursery, Chicago.

Urinals, Porcelain Enameled.
Standard Sanitary Mfg. Co., Pittsburg, Pa.

Valve (Anti-scalding Shower).
Union Brass Works Co., Boston, Mass.

Valves and Fittings.
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Kewanee Water SupplyCo., Kewanee, Ill.

Window Lines.
Samson Cordage Works, Boston, Mass

Wire Cloth.
Clinton Wire Cloth Co., Clinton, Mass.

Wrought Iron Railings and Grilles.
Winslow Bros. Co., Chicago.

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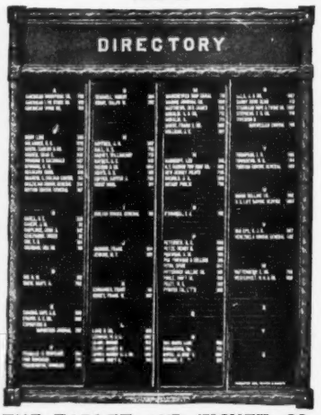

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